Indo-European Origins of the Greek Hexameter

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Abstract

The basic Indo-European line was an iambic octosyllable with variable realizations licensed by a set of metrical correspondence rules. These included SYNCOPATION (called "anaclasis" in Greek metrics), a unique device of inherited Indo-European quantitative meters which licenses the equivalence of – ⏑ and ⏑ –. In Greek, several syncopated patterns became independent meters in their own right, notably the hexameter, derived by choriambic and ionic syncopation from tetrameters that had arisen from dimeter distichs by a fusion process that began already in Vedic. The mixed iambic-dactylic meters found in early Ionic verse (Nestor's cup, Archilochus, Hipponax) may continue intermediate stages of this development. Other progeny of the inherited iambic dimeter in Greek are glyconics and their kin, iambo-choriambic meter, and dochmiacs.

The proposed iambic derivation of the hexameter explains much of its colometry and its occasional exceptional trochaic feet, and has the advantage of deriving it directly from the most likely vehicle of Indo-European epic verse. Although much of my argumentation is independent of any particular view of meter, some of it presupposes a conception of generative metrics that defines meters by simple uniform rhythmic templates and by correspondence rules that specify their permissible realizations. Therefore I preface my analysis of Indo-European meter with an exposition of the approach and its implications for historical metrics. Readers familiar with generative metrics may want to skip this part and proceed directly to section 2.

1 What are meters and how do they change?

1.1 Generative metrics

Generative metrics goes beyond "dictionaries" of metrical repertoires to their "grammars", and seeks the constraints that delimit the typological space within which those grammars are situated. It draws on linguistics both as a methodological model and as a source of explanatory principles. The justification for such a linguistically oriented approach is that meter is doubly grounded in language. In the first instance, language itself is already rhythmically organized by the prominence-defining features of stress, phrasing, and syllable weight; metrical constraints superimpose a second layer of rhythmic organization on this inherent linguistic rhythm. The metrical constraints turn out to be formally and substantively akin to the intrinsic linguistic ones, and like them constitute knowledge that is intuitive, in some cases even inaccessible to direct reflection, and productive in that it can be extended to new instances.

Among the specific approaches that generative metrics offers, the modular template-matching approach seems to me the most promising.[1] It defines a meter by an abstract rhythmic structure of the type used for representing stress in language, either a labeled tree or equivalently a bracketed grid, and a set of constraints that evaluate the correspondence between this rhythmic structure and the rhythmic structure assigned by phonology to a text. The metrical constraints evaluate a text as metrical if they license a match between these representations, and assess its complexity by the (possibly weighted) least sum of its licensed mismatches. It goes without saying that this is not a normative approach but an empirical one: the validity of a metrical analysis of a body of verse must be judged by how well its predictions match poetic practice and intuitions, and the validity of a metrical theory of verse must be judged by how accurately it constrains metrical analyses and provides theoretical justification for empirically supported ones.

The metrical patterns and correspondence constraints together define what Jakobson called the VERSE DESIGN. It is distinct from a VERSE INSTANCE — the output scansion, or metrical parse, of a particular text. For example, if the verse design stipulates a caesura in one of a range of positions, an instance of it must have a caesura in one of those positions. The realization of a verse instance in song, recitation, or dialog in turn is a DELIVERY INSTANCE, which may deploy features of intonation, phrasing, and emphasis beyond any that may be imposed by the meter, potentially conveying additional meanings. For example, line boundaries or caesuras may or may not be realized as breaks in performance. Against earlier articulations of generative metrics, including my own, I regard recitation and text-setting practices that constrain delivery instances as being in the province of metrical theory.[2] The reasons, again, are not methodological but empirical. It is clear that predominant metrical systems and recitation/singing/textsetting practices in a poetic

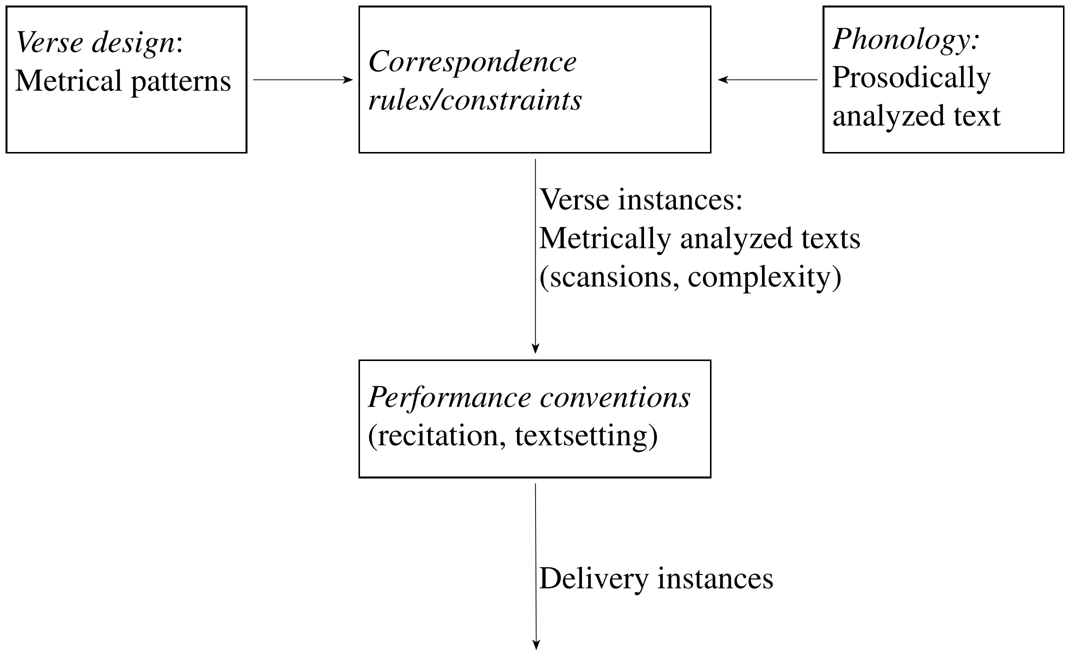
[1]See Blumenfeld 2015 for an innovative version of this approach, and for a comparison with other approaches to generative metrics, notably the bottom-up parsing approach of Fabb & Halle 2008, which denies the rhythmic nature of meter (critiqued in Kiparsky 2009), and the non-modular approach of Golston 1998, Golston & Riad 2000, 2005. Representative work that follows the modular template-matching approach includes Deo 2007, Deo & Kiparsky 2011, Hanson 1991, 2002, 2006, 2009a, 2009b, Hanson & Kiparsky 1996, Hayes 1983, 1988, 1989, 2009, Hayes & McEachern 2006, Hayes & Moore-Cantwell 2011, Hayes, Wilson, & Shisko 2012 (the latter two with probablistic constraints), Kiparsky 1975, 1977, 2006a, Ollett 2012, Prince 1989, Youmans 1989, among others.

[2]Here I depart from much of generative metrics, where the Jakobsonian distinction between verse and delivery has either been turned into an exclusion (most radically by Fabb & Halle 2008, who relegate rhythm to an epiphenomenal "property of the way a sequence of words is read or performed", p. 242), or subsumed under the musical rhythm of song or recitation (Hayes & McEachern 2006).

tradition are mutually accommodated and causally connected. The idealizations that are useful in the study of formal grammar are too restrictive in metrics because they would preclude the study of such causal connections to music, dance, genre, and practices of performance and composition. We will want to take account of these connections in section 3 below as we assess the plausibility of theories that derive the hexameter, an epic narrative meter, from the splicing together of two lyric meters.

The structure of metrical theory on this view is shown in (1):

(1)



A text is assumed to have a prosodic representation assigned by the phonological system, which may be that of the ordinary language or of a conventionally modified poetic *Kunstsprache*. The correspondence constraints match this prosodic representation with a metrical pattern. Any licensed match is an acceptable scansion (metrical parse) of the text; the simplest match is (other things being equal) the preferred scansion. I'll refer to any licensed scansion of a text as a metrical ANALYSIS.

The component of performance conventions characterizes the ways a text can be recited, chanted, or sung. Delivery can reflect either the metrical pattern or inherent linguistic rhythm, or some combination of them, by conventions that vary across genres and traditions.[3] But the metrical analysis itself is independent of how it is rendered in an actual performances, just as a musical score is invariant regardless of how the piece is played conventionally or on a particular occasion. A metrical analysis is an abstract mental construct, just as the structure perceived in music (Lehrdal and Jackendoff 1983: 18). It is inferred from the distribution of prominence-bearing rhythmic features in the verse on the basis of tacit knowledge of the correspondence constraints, grounded in the

[3]The theory of Greek meter distinguishes between spoken and sung verse. Related to this is a distinction between meter and rhythm drawn in Aristotle's *Poetics* (1.1447.13-28, Primavesi 2013). He defines *poiesis* as *mimesis* in the verbal medium (*logos*). Verse is *poiesis* characterized by *metron* 'measure'. Verse that is recited to a fixed beat (perhaps marked by musical instruments, dance steps, or the tapping of a stick) is, in addition, characterized by *rhythmos*. This included lyric and dramatic verse, but not (at least in Aristotle's day) epic verse and didactic verse; these have *metron* but not *rhythmos*.

language faculty. The constraints are applied intuitively and automatically, as in the perception of language and music. They need not be explicitly articulated, and typically they are not consciously accessed at all.[4] That is why the meter of a poem cannot be read off a spectrogram of its recitation, but can be inferred even from partial, indirect, and variable rhythmic cues and regularities in the text. In short, meter is rhythm, but it is not rhythm in a phenomenal sense.

The restrictiveness of the correspondence rules varies widely within and across metrical traditions, and depends partly on the type of verse they are used in. Meters in which the constraints responsible for the realization of metrical positions are defined over small domains – a foot, or a pair of feet (metron, dipod) – can afford to be relatively free, allowing diverse realizations which can be exploited for variety and expressivity in stichic verse, in particular in epic and dramatic verse (e.g. blank verse, hexameter, Vedic meter, the Sanskrit *śloka*, Kalevala meter). The more complex the meter, and the larger its domain of periodicity, the harder it becomes to parse it. Very complex meters tend to be restricted to lyric verse, and support performances that adhere to rigid text-setting conventions. In the limiting case, a poem conforms rigorously to a single complex but invariant repeated pattern (Sanskrit lyric meters, Pindar's dactylo-epitrite meters, Berber songs, Arabic qasidas).

In principle, the framework outlined in (1) allows metrical variation and complexity to be either represented in the verse design, or introduced by the correspondence constraints. Research into metrical systems has shown that the latter option is generally the correct one: metrical patterns are typically simple binary hierarchical structures, and variation and complexity is due to correspondence constraints. At the lowest level of the metrical hierarchy are metrical positions grouped into binary left-headed (Strong–Weak, trochaic-dactylic) or right-headed (Weak-Strong, iambic-anapestic) feet. Correspondence constraints specify the minimum and maximum occupancy of each position in terms of authentic prosodic categories of phonological theory. There is little evidence for aperiodicity or heterogeneous foot types at the level of metrical patterns: no mixtures of iambic and trochaic feet, no departures from binarity. Unary feet are binary feet with empty Weak positions, and ternary feet are binary feet with a subdivided position. Regular alternation between binary and ternary constituents are typically rhythmically conditioned by superordinate prominence relations (Prince 1989), and can therefore be accounted for by correspondence constraints rather than being specified in the basic template. Acephaly, catalexis, and extrametricality reflect special correspondence licenses at verse edges, and likewise are not part of the basic metrical patterns.

To concretize this point, consider inverted feet, allowed in English iambic verse line-initially and line-internally after a caesura. Are inversions licensed in the metrical pattern, or in the correspondence rules? In other words, does the iambic schema have an additional trochaic option, as in (2a), or is is strictly iambic, with an added correspondence rule that permits stresses in initial Weak positions, as in (2b)?

(2) a. *Inversion by trochaic substitution*

[4] An example will help to clarify what I mean by the distinction between implicit (intuitive) and explicit metrical knowledge. Mohamed Elmedlaoui, a native speaker of Imdlawn Tashlhiyt Berber, had an intuitive grasp of the intricate metrical structure of Berber songs well before he and François Dell finally succeeded in discovering and explicitly formulating the principles behind it (Dell & Elmedlaoui 2009). But when their book was almost finished, he became aware through Jouad's (1995) work of a further key constraint that poets and singers rigorously observe, which had eluded him and which he had no intuitions about. Thus, at the beginning of his research Elmedlaoui's intuitive knowledge of the meter exceeded his explicit knowledge of it, and at its conclusion it was the other way round. This is is a typical experience when dealing with the meter of a language one knows.

1. Metrical Pattern: iambic (WS), optionally trochaic (SW) at the beginning of a line or colon.
2. Correspondence: W may not be affiliated with a lexically stressed syllable.

b. *Inversion by correspondence*

1. Metrical Pattern: iambic (WS).
2. Correspondence: a line- or colon-internal W may not be affiliated with a lexically stressed syllable.

The premise that metrical patterns are simple and complexity comed from the correspondence constrints implies that the basic pattern is invariantly iambic, and inversion is licensed by a correspondence rule as in (2b). A formal argument for (2b) within the model (1) is that the colon boundaries (caesuras) that license line-internal inversion cannot be present in the basic pattern, as required by (2a): they arise from the linguistically determined prosodic structure of the text.[5] A converging empirical argument is that just those inverted feet that most saliently realize a Strong-Weak rhythm tend to be prohibited, which would be inexplicable if they were realizations of that rhythm, as (2a) claims. This is seen most easily in versification systems that allow only restricted types of inversions. The prohibited types of inverted feet are invariably those that make the best trochees (Kiparsky 2006b). Chaucer allows no inversion with disyllables ending in the reduced vowel *-e*. Classical German and Russian versification disallows inverted polysyllables. In Finnish, inverted feet in iambic verse prohibit or disfavor just those quantitative configurations (initial H́-, or even just H́L-) which are preferred in trochees — which in fact are *required* under certain conditions in the Kalevala meter. On the doctrine of trochaic substitution, these facts would be inexplicable. Inversion would involve two unrelated peculiarities: *(1)* substitution of trochees for initial iambs, and *(2)* iamb-like properties of those substituted trochees. But if inverted feet are realizations of iambic feet sanctioned by correspondence rules, their trochee-like properties follow naturally from limits on the permitted mismatch between the iambic template and its trochaic realizations.

The choice between (2a) and (2b) may seem insignificant and abstruse, but as we turn from simple cases to the complex metrics of Greek and its Indo-European kin the principle at stake will make a world of difference.

1.2 Implications for historical metrics

The role of typology in historical-comparative metrics is twofold: to guide us to plausible reconstructions, and to identify metrical features which are cross-linguistically so frequent that they cannot be used to diagnose common origin.

As in comparative grammar, we value reconstructions that have good typological parallels. Empirical work on well-documented metrical systems shows that the abstract metrical patterns are generally simple and repetitive, and correspondence constraints are the main locus of variation. By now this finding is robust enough to qualify as a typological generalization that can guide explorations of historical-comparative metrics. But if metrical patterns are simple and repetitive rhythmic figures, and variation and complexity comes from correspondence constraints, the commonly posited Indo-European metrical pattern × × × × ◡ – ◡ – becomes doubtful. In fact, it is

[5] Also, under (2b) nothing needs to be said about the second syllable of an inverted foot, because the correspondence rules for iambic verse in all poetries that license inversion also license unprominent syllables in Strong position anyway in *all* positions, independently of inversion.

not supported by the empirical givens of any of the daughter languages either. Itsumi 1982 shows that Greek has no such meters, and Arnold 1905 shows that Vedic does not have them either. No attested Indo-European quantitative meter actually has such a form, and there is no basis for reconstructing it. The fact is: *the beginnings of lines are never wholly indifferent*.

What is true is that the beginnings of lines are *relatively* free, while cadences are *relatively* strict. But that much is true of many other meters, including historically unrelated modern European meters, and non-Indo-European meters such as Finnish Kalevala meter. Such closure effects are therefore not useful diagnostics of genetic affiliation. Convincing evidence for inherited Indo-European meter must be come from less trivial shared features. In what follows I add one such nontrivial shared feature to the Indo-European repertoire, and argue that it lies behind the origin of the Greek hexameter.

A theory with the structure in (1) further implies that change affects not only the inventory of metrical patterns but the correspondence constraints. New types of verse instances cannot be introduced without new abstract metrical patterns or new correspondence constraints. These must be taken into account in establishing metrical comparanda in attested systems and reconstructing earlier stages, including both the posited proto-meters and the intermediate stages through which they evolved, because the same output pattern can reflect different abstract patterns, and conversely. For example, much has been made of the fact that the Greek glyconic pattern ○○ – ◡ ◡ – ◡ – (or even × × – ◡ ◡ – ◡ –)[6] is identical with one of the line types that instantiate the Vedic octosyllabic dimeters (gāyatrī/anuṣṭubh).[7] The observation is certainly intriguing, but we can't assess its significance for historical-comparative Indo-European metrics without placing the sequence in the context of the respective metrical systems of the two languages by specifying the metrical responsions it participates in, and the abstract pattern it realizes. In Greek, the glyconic is affiliated with its syncopated form, the wilamowitzianus ○○ – × – ◡ ◡ –, most commonly realized as – × – × – ◡ ◡ –, and its acephalic form × – ◡ – ◡ ◡ –, the "telesillean", with which the glyconic enters into strophic responsion; they are ALLOMETERS that together constitute a well-profiled meter.[8] In Vedic, on the other hand, "glyconic" forms are just so many realizations of the octosyllable, the iambic dimeter. In Greek, iambo-choriambic dimeter is a distinct meter, with variations such as as ◡ – ◡ – – ◡ ◡ – and – ◡ ◡ – – ◡ ◡ – (p. 25), which are vanishingly rare in Vedic dimeters. The idea that all these meters instantiate a nondescript schema × × × × – ◡ ◡ – in Greek was refuted by Itsumi 1982. Thus the equation between Vedic and Greek ○○ – ◡ ◡ – ◡ – conceals their different values in their respective systems. This does not mean that Greek and Vedic "○○ – ◡ ◡ – ◡ –" are unrelated. In fact, I argue below that they are ultimately cognate in that, although they instantiate distinct meters, these distinct meters have evolved from a common prototype.

A corollary of (1), then, is that comparative metrics must be based not on verse instances but on verse design — the system of abstract patterns and correspondence constraints that govern responsions. Establishing this system is the analog of internal reconstruction in comparative grammar, and as in grammar it is a step that for methodological reasons should precede comparative reconstruction. This requires going beyond a static taxonomy of cola and their combinations to a dynamic approach (Itsumi 2009).

Verse design is generally stabler than its manifestations in verse instances. For example, be-

[6] 'oo' stands for two syllables, one of which is Heavy, and × stands for any syllable.

[7] Meillet 1923, Watkins 1963, Nagy 1974, West 2007: 40.

[8] "Wenn dem Glykoneus vorn eine Silbe fehlt, so mögen wir das ein Telesilleion nennen, unter Glykoneen ist es doch ein Glykoneus." (Wilamowitz-Möllendorff 1921: 294). The unity of this meter, conventionally but not quite felicitously called the choriambic dimeter, is demonstrated by Itsumi 1982 for Corinna, Euripides, and Aristophanes.

cause of sound changes in Greek and Vedic very few verses in either language will have the same scansion when etymologically transposed into the other. Yet the metrical systems of both languages are cognate and similar in many ways. On a smaller time scale, English and other European languages provide examples of stability verse design in the face of disruptive phonological change. For example, Chaucer's iambic pentameter resembles Wyatt's, even though most lines of Chaucer no longer scan properly in Wyatt's language because of the loss of final weak syllables.

If meters are hierarchically organized, it follows that they cannot be created from existing meters by inserting bits of other meters into them, or by stitching them together arbitrarily. New types of lines are generated by new hierarchical templates or by new correspondence constraints. New hierarchical templates could be made by changing the headedness of an existing one, doubling it, or separating an immediate constituent of it. New correspondence constraints could involve catalexis, acephaly and other related edge effects at any level of the hierarchy (metrical positions, feet, metrons), or the prominence properties that differentiate Strong and Weak positions, such as those for quantitative meters in (3) below.

With these principles and caveats in mind, I turn to a characteristic pattern of quantitative redistribution found in all early Indo-European meters that are based on syllable weight.

2 Quantity and syncopation

2.1 IE quantitative meter

Syllable weight has both a gradient aspect and a categorical one. Stress and prosodic morphology reveal a scale of syllable weight: -VVC $\succ$ -VV $\succ$ -VR $\succ$ -VT $\succ$ -V (e.g. Finnish, Kiparsky 2003). In many verse traditions, poets are sensitive to such gradient weight distinctions (proposed by West 1970 for Greek, statistically confirmed by Ryan 2011 for Finnish, Tamil, Old Norse, and Vedic). At least in some languages, even onsets contribute to gradient weight (Everett & Everett 1984, Gordon 2005, Ryan 2011, 2014).

But in all quantitative meters, to my knowledge, categorical constraints apply to a binary distinction fixed by a language-specific cutoff-point on this scale. For example, meters never have a three-way weight distinction "Light : Heavy : Superheavy". If they treat Superheavy syllables differently from regular Heavy ones, it is not as a third quantity but rather as the equivalent of two syllables – ⏑, as in Persian and Urdu. Moreover, onsets never seem to play a role in this binary categorization.

In line with the idea that metrical complexity is located in the correspondences constraints, binary and ternary quantitative meters have the same basic foot structure, respectively left-headed (Strong-Weak) for trochaic and dactylic meters, and right-headed (Weak-Strong) for iambic and anapestic meters. The difference between them is how the difference in prominence between the Strong and Weak positions is expressed by weight. This can be done in two ways: either on a syllabic basis, as a contrast between Heavy and Light syllables, or on a moraic basis, as a contrast between bimoraic units ("moraic trochees") and monomoraic units. This is the difference between MORA-COUNTING and WEIGHT-SENSITIVE meters. In either case, both Strong positions and Weak positions can be constrained, but in opposite ways of course: Strong positions can require prominent elements and Weak positions can require non-prominent elements. Letting – mean "a Heavy syllable", and ⏖ "a Heavy syllable or two Light syllables", we have a rudimentary typology of correspondence constraints:

(3) a. Strong positions

i. Must be ⏖ (less restrictive)

ii. Must be – (more restrictive)

b. Weak positions

i. Cannot be ⏖ (more restrictive)

ii. Cannot be – (less restrictive)

Note that (3aii) and (3bi) enforce isosyllabicity.

Greek binary meters exploit all these options:

(4) a. Strict iambic (⏑ –)

i. Strong positions must be –

ii. Weak positions cannot be ⏖

b. Iambic with resolution in S (⏑ ⏖)

i. Strong positions must be ⏖

ii. Weak positions cannot be ⏖

c. Iambic with resolution in S and split W (⏕ ⏖)

i. Strong positions must be ⏖

ii. Weak positions cannot be –

(4a) is common in early lyrical verse, (4b) in tragedy, and the least restrictive (4c) in satyric drama and comedy, see Wilamowitz-Möllendorff 1921: 290-293 (*Doppelsenkungen*), West 1982: 88-93.

A ternary meter is defined as one where both S and W are bimoraic (moraic trochees). In such meters the correspondence constraints on positions determine the distribution of Heavy syllables and two Light syllables.

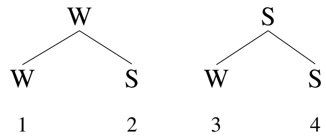
2.2 Syncopation

Syncopation is a weight mismatch between the abstract pattern (verse design) and its instantiation, by which a Light syllable in a Strong position is licensed by a Heavy syllable in an adjacent Weak position within the same colon. Either of the Strong positions in an iambic metron can be filled by a Light syllable, with the missing mora supplied by a Heavy syllable in one of the adjacent Weak positions, provided no caesura intervenes. Thus an iambic metron allows three types of syncopation, which I'll call CHORIAMBIC, IONIC, and GLYCONIC,[9] according to their characteristic effects; see (5) for a schematic illustration (the metrical positions are numbered for convenient reference).[10]

[9]By analogy to "choriambic" and "ionic" the third type would be "antispastic", but "glyconic" is perhaps more felicitous because antispasts are not metrical units in their own right in any metrical system as far as I am aware, whereas glyconics in Greek, also generated by the third type of syncopation, are.

[10]To a limited extent, syncopation can also occur across a metron boundary (e.g. positions 4 and 5 in iambic verse). To avoid proliferation of terms I will subsume this type of syncopation, to the extent that it occurs, under the ionic type.

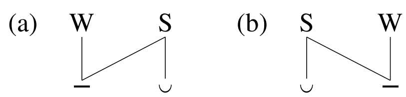
(5)



	1	2	3	4	
(a)	⏑	–	⏑	–	no syncopation
(b)	–	⏑	⏑	–	choriambic syncopation (positions 1 and 2)
(c)	⏑	⏑	–	–	ionic syncopation (positions 2 and 3)
(d)	⏑	–	–	⏑	glyconic syncopation (positions 3 and 4)

Although syncopation could be thought of as a kind of quantitative metathesis, in terms of correspondence constraints it is a weight displacement, a misalignment between metrical positions and syllables rather than a reversal (Golston & Riad 2005: 106 ff.). A Heavy Weak position contributes its extra mora to supply the missing weight of the adjacent Strong position, as informally visualized in (6).

(6)



Syncopation has a double function. As an optional correspondence rule, it generates patterns of synchronic equivalence (responsion) within some meters. It also functions as an obligatory correspondence rule that is a constitutive defining feature of meters with an independent status in their own right.

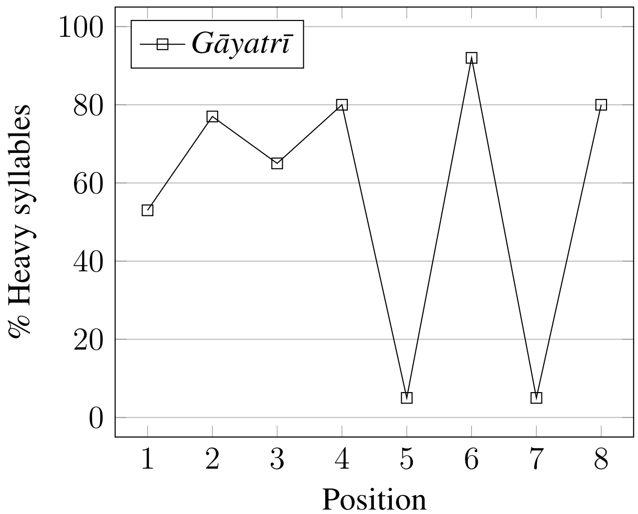
Syncopation operates systematically in Indic, Persian, and Greek quantitative meters. In these three traditions, syncopation is optional in some meters, obligatory at a specific point in the line as an invariant feature of some important stable meters, and generates additional rare or nonce meters. It is an important source of variation in the Rigvedic meters (Arnold 1905: 36), and continues to function productively in Classical and Middle Indic verse. It is well-documented in Persian meters (Hayes 1979) and in their Urdu adaptations (Deo & Kiparsky 2009). In classical Greek it has been recognized since antiquity under the term ANACLASIS.

Syncopation is a hallmark of Indo-European quantitative meters; I have found no indigenous instances of it anywhere else. I shall argue that it is inherited from the proto-language, and that it is present at the birth of the Greek hexameter. The following sections review the role of syncopation in the inherited Indo-European quantitative versification systems.

2.3 Vedic meter

Vedic has two main types of dimeter stanzas, anuṣṭubh (4x8 syllables) and gāyatrī (3x8), and two main types of trimeters, jagatī (4x12) and its catalectic form triṣṭubh (4x11).

As summarized by Arnold (1905: 149), "the general type of dimeter verse follows a metrical scheme of an iambic character, namely ⏓ – ⏓ – | ⏑ – ⏑ ⏓, variation from this scheme being comparatively common in the opening of the verse and occasional in the cadence"; the predominant variation being that the first and especially the third position, though Weak, are much more often affiliated with a Heavy syllable than the fifth and seventh. Thus, although the first metron is iambic too, it is much more variable than the cadence. The incidence of Heavy syllables in Rigvedic *Gāyatrī* dimeter according to Ryan (2014) is reproduced in (7).



(7)

In contrast to the relatively free initial metron, about 97% of Rigvedic lines have an iambic final cadence, catalectic in the 11-syllable Triṣṭubh.

(8) a. Dimeter: … $\overset{5}{\smile}\ \overset{6}{-}\ \overset{7}{\smile}\ \overset{8}{\times}$

b. Jagatī: … $\overset{8}{-}\ \overset{9}{\smile}\ \overset{10}{-}\ \overset{11}{\smile}\ \overset{12}{\times}$

c. Triṣṭubh: … $\overset{8}{-}\ \overset{9}{\smile}\ \overset{10}{-}\ \overset{11}{\times}$

The final position is anceps (marked here as ×), but with a bias for the metrically expected weight: Heavy in meters with an even number of positions and Light in meters with an odd number of positions (Ryan 2013). The initial position is also indifferent, with no apparent bias for Light syllables (Arnold 1905). Syllable weight is assessed at the *output* phonology, with resyllabification across word boundary, though certain postlexical processes, such as vowel contraction across word boundary and Sievers' Law vocalization of underlying /y/ and /v/, count only optionally for purposes of the meter (for a phonological analysis of these cases, see Kiparsky 1972).

The iambic rhythm is not only statistically predominant, but structurally underlying: it is latently present in its other realizations, as Oldenberg put it.[11] Deviations from iambicity are allowed in the first half of the line, but they are not random; there is a system of correspondence constraints

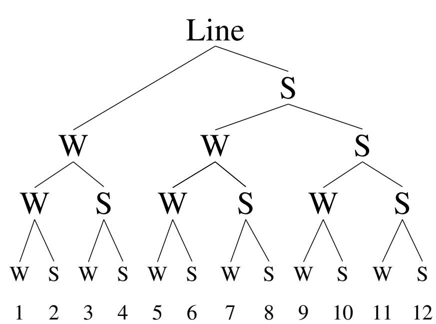
[11] "Dieser [jambische] Rhythmus liegt in der zweiten Hälfte der Reihe offen zu Tage. In der ersten Hälfte kann er ebenfalls offen, er kann aber auch sozusagen latent vorhanden sein: latent, d.h. in der Weise, dass die jambische Vertheilung der Icten in freierer Handhabung durch gewisse andre Vertheilungen vertreten wird, die sich, indem vom Reihenende her Licht auf die fällt, eben als Vertretungen des jambischen Rhythmus oder als auf ihn hinarbeitend erweisen. Die Forderung gleicher Entfernung der Icten wird dabei nicht erhoben: in dieser Hinsicht macht sich eine Freiheit bemerklich, die sich in der späteren vedischen und nachvedischen Zeit zur bewussten Ausschliessung allzu gleichmässiger Wiederkehr der Hebungen entwickelt. Aber innerhalb der gestatteten Ungleichheit der Bewegung erinnert doch im Reiheneingang die unwandelbar festgehaltene Zahl der vier Sylben, die wenigstens überwiegend festgehaltene Zahl der zwei Hebungen und endlich das ausgeprägte Vorherrschen der Formen ⏓ – ⏓ – den Hörer beständig daran, dass sich der Vers im Fahrwasser des jambischen Rhythmus befindet, zu welchem dann der Reihenausgang immer von Neuem zurücklenkt." (Oldenberg 1988: 21-22). This perceptive characterization of Vedic meter was brought to my attention by Dieter Gunkel.

behind them.[12] Heavy syllables are allowed in Weak positions of the first metron context-freely, but Light syllables in Strong positions must be licensed by syncopation. The second syllable is Heavy in about 80% of lines, more often in trimeter, less often in dimeter. If it is Light, the third syllable is Heavy by syncopation in about 90% of cases. So 98% of all lines have a Heavy syllable either in second position or in third position. In the remaining 2% of lines (listed in Arnold 1905: 157-158, 195-197), the *first* syllable is usually Heavy (choriambic syncopation, (5b)). It may be significant that in the minuscule residue of cases that are not covered by these generalizations, the second or third syllable either ends in a word-final -VC that for some reason is not resyllabified with the initial V of the next word, and thus counts as Heavy, or in the final -V of a preposition or particle.[13] This justifies Oldenberg's view that the diverse patterns in the first metron are realizations (*Vertretungen*) of iambic rhythm.

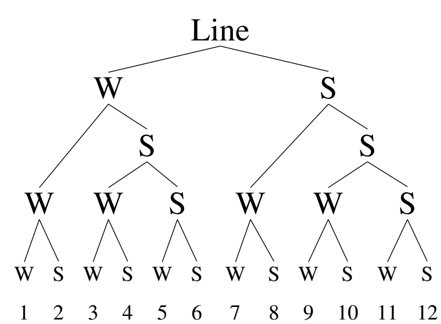
All this holds for trimeter as well. The first metron is most commonly realized as iambic, and the last metron obligatorily so (taking into account that the initial and final positions are anceps). Trimeter lines have an obligatory caesura either after the fourth, Strong position (EARLY CAESURA) or after the fifth, Weak position (LATE CAESURA). A Light syllable in fourth position before an early caesura must be preceded by a Heavy syllable, which supplies the missing mora by glyconic syncopation. Ionic syncopation with the fifth position is not available, being apparently blocked by the intervening caesura. (As we shall see, syncopation is generally blocked across caesuras in all Indo-European quantitative verse forms.) The additional middle metron in the trimeter is very variable. The main source of the variability is that the sixth position of trimeter verse, though Strong, is Light in the majority of lines (90% in Jagatī, 88% in Triṣṭubh, according to Gunkel & Ryan 2011). In this case, the quantitative mismatch remains unlicensed by left or right syncopation in at least 10% of cases after the early caesura, and in the majority of cases after the late caesura, assuming that cannot take effect across a caesura.[14] Since the middle metron is rarely iambic, completely iambic trimeter lines are uncommon.

Assuming that metrical constituency is binary and right-branching, trimeter and hexameter admit two structures. If the feet are grouped into binary metra, as in Greek, trimeter must have the structure (9a) (see section 2.6 below). Absent a metron level, the line would break into two half-lines as in (9b).

(9) (a)



(b)



For Vedic the matter is not so clear, though (9a) is more likely because it makes sense of the early caesura after position 4. The late caesura is then displaced rightward by one position (rather than

[12]Because of this variation 'it has often, but incorrectly, been supposed that the earlier part of the verse is non-rhythmical.' (Arnold 1905: 9). 'The habit of ascribing the metrical variations of the Rigveda to chance is the necessary result of imperfect familiarity with the details.' (Arnold 1905: 177)

[13]RV 1.68.2a pári yád eṣām éko víśveṣām illustrates both cases.

[14]The frequencies vary somewhat for the different layers of the Rigveda (Arnold 1905: 138). On the assessment of syllable weight at different junctural positions in the Rigveda, see in general Gunkel & Ryan 2011.

leftward as under (9b)). Position 6 is the only Strong position that is commonly filled by a Light syllable without compensatory syncopation. The great majority of such syllables are word-initial (Arnold 1905: 156), which in this position means immediately post-caesural. They seem to have a quasi-anceps status analogous to anceps line-initial syllables. However, some Light syllables in sixth position are word-medial (such as 4c, 7c, 8a, 8c, 8d in (10) below), so the caesura only partially explains the licensing of Light syllables in position 6.

To illustrate Vedic trimeter variation and the proposed method of scansion, I add a metrical analysis of RV. 1.55, the first hymn in the Rigveda composed entirely of jagatī stanzas, comprising four 12-syllable lines each.[15]

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[15]The text follows van Nooten & Holland 1994 and Kevin Ryan's *Rig-Veda Search* site `http://www.meluhha.com/rv/`.

(10)

		W	S	W	S	W	S	W	S	W	S	W	S
		1	2	3	4	5	6	7	8	9	10	11	12
1a.	diváś cid asya varimā́ ví papratha	◡	–	◡	–	◡	◡	◡	–	◡	–	◡	◡
1b.	índraṃ ná mahnā́ pr̥thivī́ caná práti	–	–	◡	–	–	◡	◡	–	◡	–	◡	◡
1c.	bhīmás túviṣmāñ carṣaṇíbhya ātapáḥ	–	–	◡	–	–	–	◡	–	◡	–	◡	–
1d.	śíśīte vájraṃ téjase ná váṃsagaḥ	◡	–	–	–	–	–	◡	–	◡	–	◡	–
2a.	só arṇavó ná nadíyaḥ samudríyaḥ	◡	–	◡	–	◡	◡	◡	–	◡	–	◡	–
2b.	práti gr̥bhṇāti víśritā várīmabhiḥ	◡	[◡	–]	–	◡	–	◡	–	◡	–	◡	–
2c.	índraḥ sómasya pītáye vr̥ṣāyate	–	–	–	–	◡	–	◡	–	◡	–	◡	–
2d.	sanā́t sá yudhmá ójasā panasyate	◡	–	◡	–	◡	–	◡	–	◡	–	◡	–
3a.	tuváṃ tám indra párvataṃ ná bhójase	◡	–	◡	–	◡	–	◡	–	◡	–	◡	–
3b.	mahó nr̥mṇásya dhármaṇām irajyasi	◡	–	–	–	◡	–	◡	–	◡	–	◡	◡
3c.	prá vīríyeṇa devátā́ti cekite	◡	–	◡	–	◡	–	◡	–	◡	–	◡	–
3d.	víśvasmā ugráḥ kármaṇe puróhitaḥ	–	–	–	–	–	–	◡	–	◡	–	◡	–
4a.	sá íd váne namasyúbhir vacasyate	◡	–	◡	–	◡	–	◡	–	◡	–	◡	–
4b.	cā́ru jáneṣu prabruvāṇá indriyám	[–	◡]	◡	–	–	–	◡	–	◡	–	◡	–
4c.	vŕ̥ṣā chándur bhavati haryató vŕ̥ṣā	◡	–	–	–	◡	◡	◡	–	◡	–	◡	–
4d.	kṣémeṇa dhénām maghávā yád ínvati	–	–	◡	–	–	◡	◡	–	◡	–	◡	◡
5a.	sá ín mahā́ni samithā́ni majmánā	◡	–	◡	–	◡	◡	◡	–	◡	–	◡	–
5b.	kr̥ṇóti yudhmá ójasā jánebhiyaḥ	◡	–	◡	–	◡	–	◡	–	◡	–	◡	–
5c.	ádhā caná śrád dadhati tvíṣīmata	◡	–	◡	–	–	◡	◡	–	◡	–	◡	◡
5d.	índrāya vájraṃ nighánighnate vadhám	–	–	◡	–	–	◡	◡	–	◡	–	◡	–
6a.	sá hí śravasyúḥ sádanāni kr̥trímā	◡	–	◡	–	–	◡	◡	–	◡	–	◡	–
6b.	kṣmayā́ vr̥dhāná ójasā vināśáyan	◡	–	◡	–	◡	–	◡	–	◡	–	◡	–
6c.	jyótīṃṣi kr̥ṇvánn avr̥kā́ṇi yájyave	–	–	◡	–	–	◡	◡	–	◡	–	◡	–
6d.	áva sukrátuḥ sártavā́ apáḥ sr̥jat	◡	[◡	–]	[◡	–]	–	◡	–	◡	–	◡	–
7a.	dānā́ya mánaḥ somapāvan astu te	–	–	◡	[◡	–]	–	◡	–	◡	–	◡	–
7b.	arvā́ñcā hárī vandanaśrud ā́ kr̥dhi	–	–	[–	◡]	–	–	◡	–	◡	–	◡	◡
7c.	yámiṣṭhāsaḥ sā́rathayo yá indra te	◡	–	–	–	–	◡	◡	–	◡	–	◡	–
7d.	ná tvā kétā ā́ dabhnuvanti bhū́rṇayaḥ	–	–	–	–	–	–	◡	–	◡	–	◡	–
8a.	ápraksịtaṃ vásu bibharṣi hástayor	–	–	◡	–	◡	◡	◡	–	◡	–	◡	–
8b.	áṣāḷhaṃ sáhas tanúvi śrutó dadhe	◡	–	[–	◡]	–	◡	◡	–	◡	–	◡	–
8c.	ā́vr̥tāso avatā́so ná kartr̥bhis	[–	◡]	[–	◡]	◡	◡	–	–	◡	–	◡	–
8d.	tanū́ṣu te krátava indra bhū́rayaḥ	◡	–	◡	–	◡	◡	◡	–	◡	–	◡	–

Syncopated pairs of positions are boxed in (10). In the second half of the line, Weak (W) and Strong (S) positions are consistently filled by Light (L) and Heavy (H) syllables respectively (except for H in position 7 of line 8c). Lines 3a, 3c, 4a, 5b, 6b conform to this basic correspondence also in the first half, to that they reflect the underlying iambic meter throughout. Otherwise the first halves of lines allow three types of systematic mismatches:

(11) a. H in W, seen in lines 1b, 1c, 1d, 2c, 3b, 3d, 4b, 4d, 5c, 6a, 6c, 7b, 7c, 7d, 8b.

b. L in S if licensed by syncopation (positions 2 and 4): choriambic in lines 4b, 8c, ionic in 2b, 6d, 7a, glyconic in 7b, 8b, 8c.

c. L in position 6, e.g. lines 3d, 4b, 7b, 7d.

In lines 1b, 4d, 5c, 5d, 6a, 6c, 7c, 8b one could posit choriambic syncopation for positions 5-6 to license the L in the Strong position 6. This is hard to justify because position 6 can have L even without compensatory syncopation (see 1a, 2a, 4c, 5a, 8a, 8d).

The upshot is that syncopation in Vedic is limited to the pre-caesural part of the line – the first four syllables before the early caesura, the first five syllables before the late caesura. We find an analogous tendency to restrict syncopation to early portions of the line in Greek (sections 2.6, 3.2).

2.4 Syncopation in Classical Sanskrit meter

The epic śloka is transparently derived from the Vedic anuṣṭubh, but the lyrical meters of Classical Sanskrit look quite different from anything in Vedic. There are hundreds of meters, each defined by a rigidly fixed sequence of Light and Heavy syllables, whose rhythmic value is not always readily apparent. Especially the most popular meters seem downright aperiodic.

Deo (2007) has shown that classical Sanskrit meters are in fact periodic. But they differ from Vedic meters in major respects. Their metrical positions are filled by bimoraic trochees — either a Heavy syllable or two Light syllables — rather than by syllables as in Vedic. Another way of putting it is that they are predominantly MORA-COUNTING, whereas Vedic meter is WEIGHT-SENSITIVE, in that the weight contrast between Light and Heavy syllables marks the opposition in prominence between Strong and Weak metrical positions. The positions are grouped into binary left- or right-headed feet, in some meters regularly alternating with ternary feet. The feet are grouped into binary or ternary metra (dipods), and these in turn into higher groupings, which appear to be binary. Some meters require syncopation, anacrusis, and/or catalexis at designated points in the line. The structures are intuitively perceived as such by those familiar with the traditional poetry (notwithstanding the tradition's compact *trika* formulas, which are mnemonically useful but obscure the rhythm of the meters). The second difference is that the metrical responsion between lines is very tight. Even in a long poem, every line has the same pattern of Heavy and Light syllables. Finally, there are hundreds of distinct meters. As Deo points out, these differences between Vedic and Sanskrit are mutually connected.

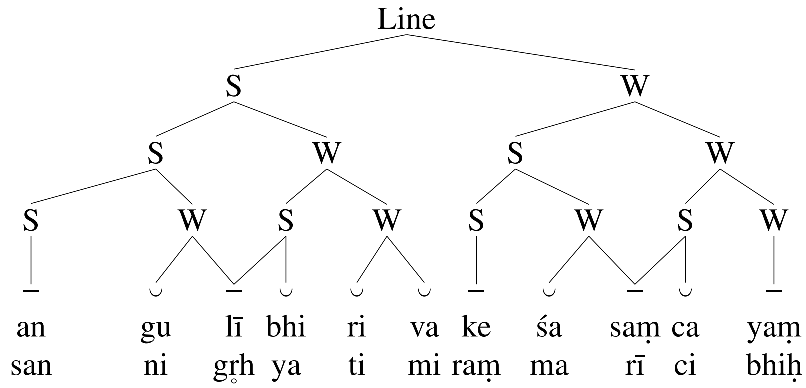
The principal rhythmic interest in these meters comes from distributing the fixed total weight of the feet among their syllables in different ways. Syncopation is the main device for achieving this, and so it becomes very important in the Classical Sanskrit metrical repertoire. In such mora-counting meters, it is natural to think of syncopation as splitting the two moras of a Heavy syllable between two metrical positions. The principle is that the extra mora of a Heavy syllable in a Weak metrical position is parsed with a Light syllable in an adjacent Strong position. As always, syncopation across caesuras is avoided.

A simple syncopating meter is *rathoddhatā*, famous from Kālidāsa's *Kumārasaṃbhava*:

(12) angulībhir iva keśasaṃcayaṃ | sannigr̥hya timiraṃ marīcibhiḥ
kuḍmalīkr̥tasarojalocanaṃ | cumbatīva rajanīmukhaṃ śaśī (8.63)
'the moon (masc.) runs the fingers of his beams through the hair of the darkness (fem.), as if kissing her face, whose lotus eyes stay closed'

Here is Deo's analysis of the rathoddhatā hemistich:

(13)



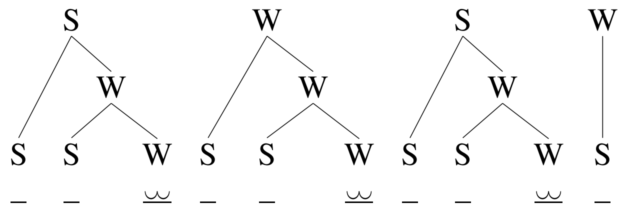
The structure is binary and left-headed all the way up: bimoraic positions are grouped into binary feet, which are grouped into binary dipods, these in turn are grouped into binary hemistichs; a pair of these, separated by a caesura, form a line. Strong positions are affiliated with Heavy syllables in Strong feet. In Weak feet they are affiliated with Light syllables and get their second mora from the preceding position by syncopation.

2.5 Syncopation in Persian meter

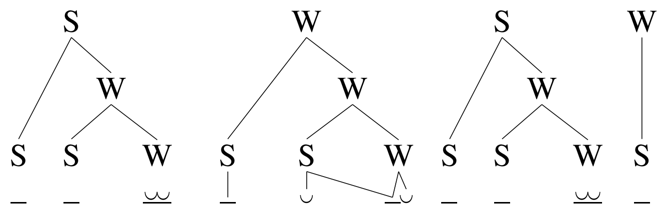
Avestan meter has been thought to have abandoned syllable weight restrictions (but see Kümmel MS.), though it retains a division of the line into cola similar to that of Vedic. Middle Persian meters, however, remain quantitative. Although their conventional classification and nomenclature is derived from Al Khalīl's theory of Arabic meters, in their actual form the Persian meters differ substantially from their Arabic namesakes and they appear to be a mix of inherited pre-Islamic Persian with superimposed Arabic elements (Elwell-Sutton 1976, Hayes 1979, Utas 1994). In Deo & Kiparsky 2009 we argued that the indigenous Persian metrical tradition had trimeter and tetrameter lines with fixed numbers of syllables and moras, restricting syncopation, catalexis, and ancipitia to line edges, and prohibiting resolution almost entirely. Borrowed Arabic meters were modified and pruned to conform to these Persian constraints. Arabic meters that could not be unobtrusively assimilated into Persian by such modifications dropped out of use (e.g. *ṭawīl*). The repertoire includes in addition a set of purely native Persian meters based on the ternary *Rubāʿī* pattern, also with syncopation.[16] The prototypical measure of *Rubāʿī* is – – ⏕, with optional syncopation –⏑–⏑ in Strong (even-numbered) feet. *Rubāʿī* has 12 interchangeable variants (I omit the top-level constituent structure to save space):

[16]Joined much later by a small layer of innovative meters based on the Indic meters mentioned in the previous section.

(14) a. Eight basic variants:



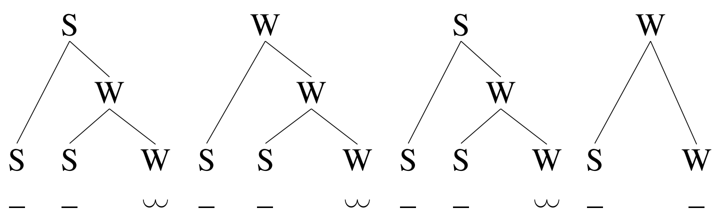
b. Plus four with syncopation:



A number of important Persian meters which lack Arabic counterparts are just *Rubāʿī* in disguise. A popular form of *hazaj* has the theoretical form (15a), but refooting it as (15b) reveals it as an unsyncopated variant of (14), with catalexis limited to the final position.

(15) a. – – ⏑ | ⏑ – – ⏑ | ⏑ – – ⏑ | ⏑ – –

b. – – ⏑⏑ | – – ⏑⏑ | – – ⏑⏑ | – –



Another form of *hazaj*, likewise likewise with no direct Arabic counterpart, is represented by Persian metrists it as (16a), but (16b) shows it to be just a non-catalectic variant of *Rubāʿī*.

(16) a. – – ⏑ | ⏑ – – – ‖ – – ⏑ | ⏑ – – –

b. – – ⏑⏑ | – – – ‖ – – ⏑⏑ | – – –

With syncopation, we derive four additional Persian meters from the same template, including *muẓāriʿ*, entirely absent in this form in Arabic, here exemplified with the beginning of a famous ghazal by Hafez (Boylan et al. 1988: 35).[17]

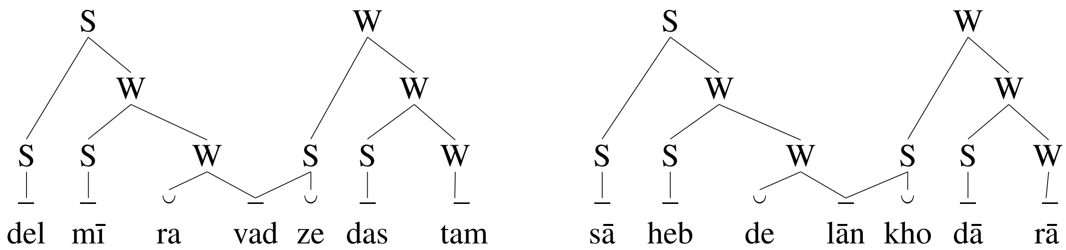
(17) del mīravad ze dastam. sāheb-delān! khodā rā!
dardā! ke rāz-e penhān, khāhad shod-āshkārā.

'I am losing control of my heart. O Lords of love, help me, for God's sake!
Alas! The hidden secret shall be revealed.'

[17]Thanks to Masoud Jasbi for help with the transcription and translation.

The analysis is as follows:

(18)



More indirect evidence for the inherited Persian metrical system comes from the modifications made in the borrowed Arabic meters to fit them to it: ancipitia and catalexis were restricted to line edges, and in some cases eliminated by fixing positions as Heavy or Light:

(19) Arabic ⏑––⏒ | ⏑––⏒ ‖ ⏑––⏒ | ⏑––– *hazaj*
Persian ⏑––– | ⏑––– | ⏑––– | ⏑––– *hazaj*

Resolution was generally eliminated (e.g. *kāmil)*:

(20) Arabic ⏕–⏑– | ⏕–⏑– ‖ ⏕–⏑– | ⏕–⏑– *kāmil 2*
Persian ⏑⏑–⏑– | ⏑⏑–⏑– | ⏑⏑–⏑– | ⏑⏑–⏑– *kāmil*

Bicipitia were heavily restricted, and verse length was restricted to a maximum of four feet. Short meters were expanded to fit the tetrameter norm, e.g. *rajaz*:[18]

(21) a. Arabic ⏓⏑⏑– | ⏓⏑⏑– | ⏓⏑⏑– *rajaz 1*
Persian –⏑⏑– | ⏑–⏑– ‖ –⏑⏑– | ⏑–⏑– *rajaz 1*

b. Arabic ⏒–⏑– | ⏒–⏑– | ⏒–⏑– *rajaz 2*
Persian ––⏑– | ––⏑– | ––⏑– | ––⏑– *rajaz 2*

Long meters were clipped, e.g. *ramal* (similarly *munsariḥ*):

(22) Arabic ⏓⏑–– | ⏓⏑–– ‖ ⏓⏑–– | ⏓⏑–– | ⏓⏑– *ramal*
Persian –⏑–– | –⏑–– | –⏑–– | –⏑– *ramal*
⏓⏑–– | ⏑⏑–– | ⏑⏑–– | ⏕– *ramal*

2.6 Syncopation in Greek meter

The responsion in Greek verse between iambic metra (⏑ – ⏑ –) and choriambic and ionic metra (– ⏑ ⏑ –, ⏑ ⏑ – –) attracted the attention of musicologists and metrists already in antiquity, who explained it by the temporal equivalence of ⏑ – and – ⏑.[19] They posited a process of ANACLASIS to account for the responsion patterns in those meters. Wilamowitz (1886) extended the concept

[18] As usual, the *anceps* positions are replaced by obligatory length in deference to the Persian system.

[19] See Barris 2011: 40 ff., who cites Aristoxenus (Ἁρμονικῶν στοιχείων) Aristides Quintilianus (Περί Μουσικῆς), Hephaestion (Ἐγχειρίδιον περὶ μέτρων, Ophuijsen 1987) and Dionysius of Halicarnassus (Τέχνη ῥητορική).

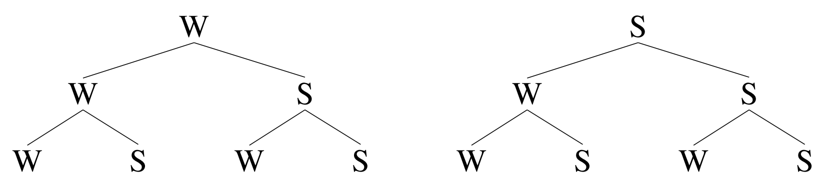
and applied it to other meters. Thus – ◡ ◡ – ◡ – ◡ – (¨*gl*), – ◡ – ◡ – ◡ ◡ – (*gl*¨), and ◡ – ◡ – – ◡ ◡ – are anaclastic variants of the basic glyconic × × – ◡ ◡ – ◡ – (West 1982: 31, 96, 141). Anaclasis has been understood as a *historical* process by which meters evolve; hence it is customary to speak of anaclasis even in cases where the derived variant is more frequent or has become an independent meter (West 1982: 31, 57, 65, 82, 117, 166, 170).

For consistency I will continue to use the term "syncopation" instead of switching to "anaclasis" for the quantitative correspondence in Greek, even though it has an older established use in Greek metrics.[20] It is well-established in musicology and metrics, and should cause no confusion here.

The approach outlined here, confirmed by typological parallels in Sanskrit and Persian-Urdu meters, implies that the alternating patterns reflect the basic verse design directly and that rhythmically more complex variants are licensed by correspondence rules. The abovementioned 8-syllable patterns, then, are syncopated variants of iambic dimeter (◡ – ◡ – , ◡ – ◡ –). Some are in regular response with it: choriambics combine with iambics in Anacreon and Ibycus (West 1982: 57). Others have become independent meters in their own right, e.g. glyconics and their associates.

In Greek dimeter, syncopation is normally restricted to the Weak metron. So a dimeter archetype has three syncopated variants:

(23)



	1	2	3	4		5	6	7	8	
(a)	◡	–	◡	–	|	◡	–	◡	–	unsyncopated dimeter
(b)	–	◡	◡	–	|	◡	–	◡	–	choriambic syncopation
(c)	◡	◡	–	–	|	◡	–	◡	–	ionic syncopation
(d)	◡	–	–	◡	|	◡	–	◡	–	glyconic syncopation

The form (28d), derived by just syncopating the second foot, was considered the basic form of the glyconic meter by the Alexandrian metrists. Its other variants, subsumed by the Aeolic base ○○ (two initial positions, at least one of them Heavy) reflect an additional optional syncopation of the first foot. Line-initial W S is realized either as ◡ – or as – – (since the initial position is anceps), or by syncopation as – ◡. In what follows I represent these alternations by an arrow that goes from from the unmarked realization to the marked realization. This notation is not meant to imply that one actual realization is derived from the other; both are alternative realizations of the underlying iambic pattern represented by abstract prominence relations, albeit differing in complexity and possibly in age. The glyconic then becomes individuated as a meter in its own right, with syncopation of the second foot as its defining feature, still as a variant correspondence, but now conventionalized.

(24) a. iambic dimeter ⏓ – ◡ – | ◡ – ◡ –

[20] Namely for the omission of a Light syllable with supposed compensatory extra lengthening of an adjacent Heavy syllable, posited by Westphal.

b. glyconic syncopation

⏓ – ⏑ – ⏑ – ⏑ –   *or:*   ⏑ – ⏑ – ⏑ – ⏑ –   iambic dimeter
↓   ↓
⏓ – – ⏑ ⏑ – ⏑ –   – ⏑ – ⏑ ⏑ – ⏑ –   glyconic

The fourth, pyrrhic variant ⏑ ⏑ is at all times the least favored realization of the Aeolic base. It is nowhere more frequent than 6% (Barris 2011: 108); Pindar and the Attic poets don't use it at all (Itsumi 2009: 26); I assume that it was not part of the original pattern but was introduced to complete the pattern implied by the other variants after the meter was established.

Additional variants of the glyconic family are derived from oo – ⏑ | ⏑ – ⏑ – by extending syncopation to the Weak foot of the second metron, and by edge truncation, as shown in (25):

(25) a. glyconic oo – ⏑ | ⏑ – ⏑ –

b. choriambic syncopation

o o – ⏑ ⏑ – ⏑ –   glyconic
↓   ↓
o o – ⏑ – ⏑ ⏑ –   wilamowitzianus

c. acephaly

o o – ⏑ ⏑ – ⏑ –   glyconic
↓   ↓
∅ ⏓ – ⏑ ⏑ – ⏑ –   telesillean

d. catalexis

o o – ⏑ ⏑ – ⏑ –   glyconic
↓   ↓
o o – ⏑ ⏑ – – ∅   pherecratean

e. acephaly + catalexis

o o – ⏑ ⏑ – ⏑ –   glyconic
↓   ↓   ↓
∅ ⏓ – ⏑ ⏑ – – ∅   reizianum

The asclepiads (minor oo – ⏑ ⏑ – – ⏑ ⏑ – ⏑ – and major oo – ⏑ ⏑ – – ⏑ ⏑ – – ⏑ ⏑ – ⏑ –) are derivable from trimeter and tetrameter in exactly the same way as the wilamowitzianus from dimeter.

Ionic syncopation is on the whole less common. In some of his poems Anacreon modulates the first hemistich of a tetrameter by ionic syncopation, producing am mixed rhythm which comes to an iambic close. In the following examples all even metrons are catalectic, and each line has a fixed medial caesura.

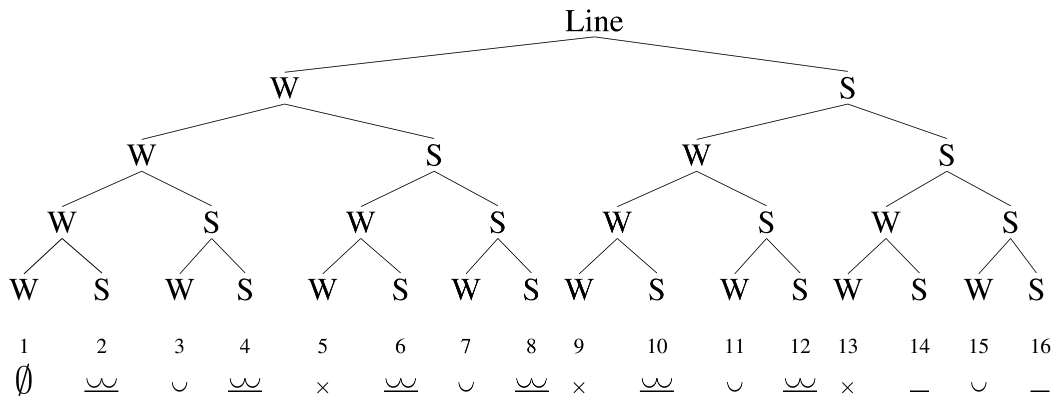
(26) a. μεγάλῳ δηὖτέ μ᾽ Ἔρως ἔκοψεν ὥστε χαλκεὺς   ⏑ ⏑ – – , ⏑ ⏑ – , ⏑ – ⏑ – , ⏑ – –
πελέκει, χειμερίῃ δ᾽ ἔλουσεν ἐν χαράδρῃ.   ⏑ ⏑ – – , ⏑ ⏑ – , ⏑ – ⏑ – , ⏑ – –
Once again Love has struck me like a smith with a great
hammer and dipped me in the wintry torrent. (Anacreon 413, Campbell 1988: 92-93)

b. ἀπέκειρας δ᾽ ἁπαλῆς κόμης ἄμωμον ἄνθος   ⏑ ⏑ – – , ⏑ ⏑ – , ⏑ – ⏑ – , ⏑ – –
'You have cut off the perfect flower of your soft hair.' (Anacreon 414, Campbell 1988: 90-91)

Different syncopations can also be combined. In section 3 I analyze combinations of choriambic and ionic syncopation and argue that they are a step in the rise of the hexameter.

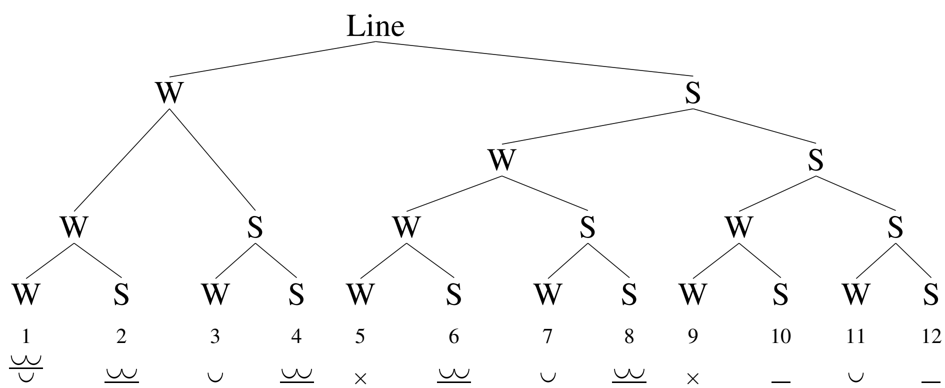
The so-called "trochaic tetrameter" of Greek poetry appears to be a headless iambic tetrameter (i.e. with an empty position 1), with resolution permitted by correspondence constraint (3ai). In this more fused form, the tetrameter does not allow a medial caesura.

(27)



The iambic trimeter has the same structure, except that the entire first metron is catalectic.

(28)



On the uniform iambic analysis the essential generalizations apply equally to both meters: Knox's Law, the generalizations about resolution, the placement of ancipitia and the first caesura, choliambic variation, and Porson's and Havet's Laws (West 1982: 40, Barris 2011: 76 ff., 97). Porson's and Havet's Laws prohibit polysyllabic words from ending in a Heavy anceps, except for position 13 and 5 in (27) and in a Heavy position 9 in (28). The iambic understanding allows them to be explained as the prohibition of two simultaneous metrical mismatches, a misalignment of words and metra and a prominence mismatch (Blumenfeld 2011). More explicitly:

(29) Porson/Havet's Law

a. Preference constraints:
   1. A word boundary should not straddle a metron boundary, except for the hemistich boundary.
   2. A Weak position should not be filled by a Heavy syllable.

b. Prohibition (categorical in lyric poetry and tragedy):
   Violations of preference constraints (a) and (b) may not overlap.

The two meters alternate with each other in drama: in *Pers.* 155-248 the tetrameters are interrupted by trimeters at 176-214. The ancient Greek metrists spoke of catalectic trochaic tetrameters rather than acephalic iambic tetrameters, unaware of the deeper generalizations that are thereby lost. But their terminology was not uniform: Aristotle in his *Poetics* refers to this very meter as ἴαμβος (Barris 2011: 77).

Syncopation in Greek is most frequent at the beginning of the line and in Weak constituents, as is the rule in Vedic. Also shared with Vedic is the generalization that syncopation is more frequent within a metron than across a metron boundary, and (as is the case with resolution) the two syllables cannot be separated by a caesura. Syncopation across a metron boundary in Greek has been posited to account for the derivation of anacreontics (⏑ ⏑ – ⏑ , – ⏑ – –) from ionic dimeters (⏑ ⏑ – – , ⏑ ⏑ – –),[21] which, according to the present analysis, are themselves syncopated iambics (⏑ – ⏑ – , ⏑ – ⏑ –). Except for Anacreon, extant older Greek verse shows no particular affinity between anacreontics and ionics/iambics (West 1982: 31).[22] Otherwise Greek allows only metron-internal syncopation.

2.7 Syncopation as an Indo-European feature

On the strength of its role in the native quantitative meters of Indic, Iranian, and Greek, we can add syncopation to the repertoire of inherited Indo-European metrical devices. As a diagnostic of historical relationship it weighs more than the features which Meillet 1923 identified as inherited — fixed syllable count, catalexis, and the fixed cadence — because it appears to be a singular trait of Indo-European, while the others occur frequently in the world's meters. The only non-Indo-European tradition of versification in which it is attested at all, to my knowledge, is classical Arabic, but there it appears to be a Persian import. Its Persian origin is revealed by its absence in the pre-Islamic corpus. Even today Bedouin oral poetry has no syncopation. Sowayan (1985: 159) lists 51 meters used in Nabaṭi poetry, and all of them lack syncopation. It shows up first in *xafīf*, a syncopated form of *ramal* represented in a classical anthology (Stoetzer 1998), later in meters like *muẓāriʿ*, where it was codified by the Persian metrist Al-Xalīl.[23]

Other than these borrowed Arabic meters, I am not aware of any quantitative meters outside Indo-European that employ syncopation. Hausa meter (Schuh 1995, 2014) has eight positions, grouped into four rising (W S) feet:

(30)	(1	2)	(3	4)	(5	6)	(7	8)
	(⏕	–)	(⏕	–)	(⏕	–)	(⏑	–)

Final and initial syllables are ancipitia. Empty positions may occur; they are included in the scansion and performed as empty beats (rests). Singing at a rapid speed to the accompaniment of a plucked string instrument, the performer leaves a rest whose length corresponds exactly to the number of empty moras. There must be at least one empty position wherever the singer changes voice (male/female) in the middle of a line. There is no syncopation.

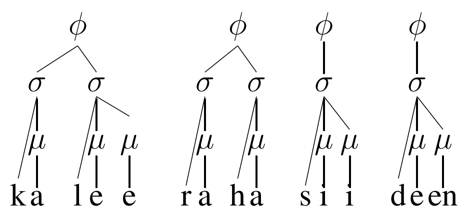
[21] Hephaistion xii (Bremer & Slings 1987: 110), West 1982: 58; rejected by Sicking 1993: 158).

[22] They appear together again in anacreontics of the late Hellenistic and Imperial period (West 1982: 168), after the loss of vowel length had reduced syncopation to an artificial convention by undermining its quantitative basis in the language.

[23] Perhaps it entered Arabic meter via the musical milieu of the border city Al-Ḥīra, where an Arabic-speaking majority mingled with a Persian cultural elite (Frolov 2000, Toral-Niehoff 2014).

Somali meter has four or eight iambic measures, with obligatory alliteration (Banti & Giannattasio 1996, Fitzgerald 2006). An iamb is maximally ◡ – (three moras), minimally ◡ ◡ or – (two moras), where CV and CVC are ◡, CVV(C) is –. There is no syncopation.

(31)



Berber meters (Dell & Elmedlaoui 2009) are based on four-mora measures. The metrical ictus, normally realized on a musical strong beat, falls on a syllable-initial second mora, in Strong measures on –, or on resolved ◡◡, in Weak measures on ◡. Therefore Weak measures end in –, Strong measures end in ◡, and *– –, *– ◡ ◡ are excluded. There is no syncopation.

The Finnish trochaic octosyllable (Kalevala meter) has four trochaic (Strong-Weak) measures, with obligatory alliteration and parallelism. A stressed (=word-initial) syllable is Heavy in Strong positions, and Light in Weak positions, where CV is ◡, other syllables are –. This preference becomes stronger throughout the line and turn into an obligatory requirement in the final foot. A Light syllable in Heavy position cannot be licensed by a Heavy syllable in an adjacent Light position, so there is no syncopation.

3 Hexameter

3.1 Previous proposals

Wilamowitz (1921: 234) put forward as a "fundamental proposition of metrics" that that iambs, trochees, ionics, etc. grow out of an abstract primordial metron —

> "ein ideelleer Viersilbler, den wir nicht benennen können, der real immer nur in den vielen Gestalten erschienen ist, aber doch mit keiner sich deckt."

He hypothesized that a pair of such abstract metra formed an eight-syllable dimeter with initial and final anceps positions. As this meter developed, certain Weak positions became omissible, and syncopation was introduced, first within a metron to yield the iambo-choriambic and glyconic-choriambic complexes, and then across metra to yield anacreontics.

I think Wilamowitz's vision is essentially right but requires two modifications: much of the system was in place already in Indo-European, and the meter was not indeterminate, or syllable-counting, but had definite quantitative restrictions derivable from an iambic base. Indo-European poets worked with an iambic dimeter and correspondence constraints that licensed edge truncation (catalexis, acephaly) and syncopation in the first metron, and could pair such dimeters into distichs. Edge augmentation, both hypermetricality (a.k.a. hypercatalexis, extrametricality) and anacrusis (procephalicity) are more marginal in inherited Indo-European quantitative meters, and while they are important in modern meters, there is little reason to reconstruct them for the proto-language.

This appears to be the starting point of the Greek lyric meters. As noted above, line-initial iambic ⏓ – accounts for the core of the Aeolic base ○○ (two positions, at least one of them Heavy) better than the traditionally postulated quantitatively free opening does: ⏓ – is realized either as – – or as ⏑ –, and the latter can be syncopated to – ⏑. Moreover, syncopation of ⏑ – ⏑ – derives exactly the three basic variations that we find associated with iambics, and sometimes in responsion with them, in Greek lyric and dramatic verse: ionic a minore ⏑ ⏑ – –, choriambic – ⏑ ⏑ –, and antispastic (glyconic) ⏑ – – ⏑. The often posited indeterminate opening ⏓ ⏓ ⏓ ⏓ fails to privilege these three forms over the others; a pattern ⏓ ⏓ ⏓ ⏓ would be equally consistent with ionics a maiore – – ⏑ ⏑, epitrites ⏑ – – –, – ⏑ – –, – – ⏑ –, and – – – ⏑, paeons – ⏑ ⏑ ⏑, ⏑ – ⏑ ⏑, ⏑ ⏑ – ⏑, and ⏑ ⏑ ⏑ –, not to speak of proceleusmatics ⏑ ⏑ ⏑ ⏑ and dispondees – – – –. None of these can be derived from the iambic base ⏑ – ⏑ – by syncopation. The marginal status of these variants, and the complete absence of some of them, is therefore explained by the analysis proposed here. Ditrochees – ⏑ – ⏑ can only arise by double syncopation in one metron; the only case where we find them is in one variant of the glyconic, where that analysis is independently justified, as was shown in (25) above.

The hexameter has no such obvious derivation. Meister (1923: 58) and Meillet (1923) conjectured that it was borrowed from the poetry of some unidentified non-Greek people of the Aegean. But if meters are not simply templates but rule-governed systems, as generative metrics claims, they cannot be acquired and borrowed in a casual way like words; they must be learned like languages. Typically they spread from high-prestige literatures through the agency of a bilingual elite, as Arabic meters did in the Islamic world, Greek meters in Latin, and Romance meters in English (Hanson 1996). Greece experienced no such profound cultural influence.[24]

More recently the origin of the hexameter has been sought in a fusion of two of the lyric meters descended from the IE dimeter by the modifications described above. West suggested as a possible source "a pherecratean and expanded reizianum, ⏓× – ⏑ ⏑ – × | × – ⏑ ⏑ – ⏑ ⏑ – –, welded together and regularized in rhythm throughout" (1973a: 169), or a hemiepes + paroemiac (1973b). Nagy 1974 posited a development from a pherecratean (catalectic glyconic) expanded by three dactyls:

(32)

1.	Pherecratean	⏓ ⏓ – ⏑ ⏑ – –
2.	Insertion of three dactyls	⏓ ⏓ – ⏑ ⏑ – ⏑ ⏑ – ⏑ ⏑ – ⏑ ⏑ – –
3.	Optional replacement of – ⏑ ⏑ by – –	⏓ ⏓ – ⏖ – ⏖ – ⏖ – ⏖ – –
4.	Obligatory replacement of ⏓ ⏓ by – –	– – – ⏖ – ⏖ – ⏖ – ⏖ – –
5.	Optional replacement of – – by – ⏑ ⏑	– ⏖ – ⏖ – ⏖ – ⏖ – ⏖ – –

Berg (1978) criticizes these theories on the grounds that the pherecratean and the reizianum, being catalectic, are typically reserved for ending a strophe, and therefore poor candidates for stichic use. He also observes that the internal expansion by three dactyls posited by Nagy is unlikely to have been available as a device in the early metrical system (indeed dactylic feet are themselves innovations in need of explanation!); it implies an implausibly late date for the rise of the hexameter, at odds with the amount of archaic formulaic material it transmits, and leaving the question what earlier epic meter the hexameter replaced — for there are good reasons to believe that epic poetry existed in Indo-European and was inherited into Greek (West 1973b 187-8, 2007).

Berg's own proposal starts with a line whose first part is an eight-syllable dimeter subsumed under the generic form × × × × ⏑ – ⏑ – and whose second part is a pherecratean.

(33) 1. Starting point (by hypothesis)
× × × × ⏑ – ⏑ – | × × × × ⏑ – –

[24] See West (1997: 234 ff.) for decisive arguments against the borrowing hypothesis.

2. Optionally swap ◡ – ◡ – and × × × × in the first hemistich, and replace the last × × in each hemistich by – ◡

   $\left\{\begin{array}{l}\text{(a) } \times\times - \smile\smile - \smile - \\ \text{(b) } - \smile\smile - \times\times\times\times \\ \text{(c) } \times\times\times\times - \smile\smile - \end{array}\right\} \times\times - \smile\smile - -$

3. Replace × × by ◡ ◡ in the second hemistich

   × × × × – ◡ ◡ – ◡ ◡ – ◡ ◡ – –

4. Replace × × × × by – – – – in the first hemistich

   – – – – – ◡ ◡ – ◡ ◡ – ◡ ◡ – –

5. Reanalysis; dactyls and spondees become interchangeable

   – ⏔ – ⏔ – ⁝ ◡̄⁝◡ – ⏕ – ⏔ – –

Berg's scenario is attractive in several respects. It starts from a meter of likely Indo-European provenance, whose transparent regularity makes it a better vehicle for epic than the lyric meters invoked by West and Nagy. It posits a development that partly parallels that of the Vedic anuṣṭubh into the epic śloka. It puts the catalectic half-line at the end. Moreover, the seam between the two merged cola nicely corresponds to the hexameter's penthemimeral caesura. Unfortunately it leaves the other caesuras and the bridges to arrange themselves on their own within an already developed hexameter. The postulation of × × × × in the proto-meter is unjustified, and is actually incompatible with the principle assumed here that underlying metrical patterns are fully footed. But it can be replaced with an iambic base and licensing conditions of the type that operate in Vedic, including syncopation, without swerving too far from Berg's account. Indeed, this simplifies it by eliminating the foot-building process of CATAMETRONIZATION that Berg has to rely on.

The biggest problem with Berg's derivation, in my view, are the unnatural intermediate stages and the arbitrary transitions between them that it must posit. In the first intermediate system, (2a) is a glyconic and (2c) is a loose wilamowitzianus, and the second hemistich is a loose pherecretean, but the combination of a fixed opening with a free cadence in the first hemistich of (2b) is typologically unparalleled. The disjunction of the three schemas in (2) is also typologically odd. Why × × should be replaced by a pyrrhic ◡ ◡ at stage (3) whereas × × × × is replaced by a dispondee – – – – at stage (4) is not clear. The first of these replacements (the "decisive step" towards the hexameter according to Berg) is strange in and of itself because ◡ ◡ is at all times the least favored realization of the Aeolic base. The latter replacement gives rise to a meter at stage 4 that is peculiar in the Greek context (although it might make a perfectly fine meter of classical Sanskrit). In sum, although the starting point is plausible (as long as we understand × × × × as ◡ – ◡ – with a Vedic-type latitude of realizations), there are too many unmotivated steps and strange meters en route between it and the attested hexameter to make this a persuasive historical derivation.[25]

3.2 A new approach

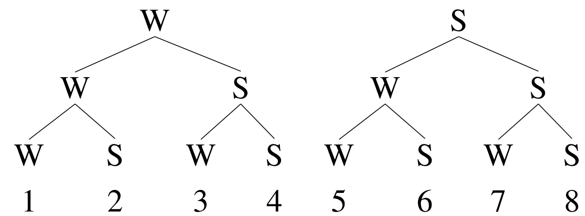
The hexameter can be derived more simply and directly from an inherited meter broadly analogous to the one that Berg assumes, by relying only on the inherited correspondence principle of syncope. In Vedic verse, pairs of eight-syllable iambic dimeters are either grouped by twos into anuṣṭubh

[25] See Haug & Welo 2001 for a concise assessment of the pros and cons of Berg's theory. Space does not permit me to go into Tichy's (1981) modifications of it.

strophes (which later develop into the mainstay of epic narrative, the śloka) or completed by a single dimeter into a gāyatrī, through fusion by successive binary steps (Gunkel and Ryan 2013). We posit that such pairs of eight-syllable iambic dimeters also fused in Greek, ultimately giving rise to tetrameter lines of the form (27).

Consider a simple eight-syllable line. We saw at (25) how choriambic syncopation could be combined with glyconic syncopation to yield the wilamowitzianus, the asclepiads, and their further derivatives such as the telesillean. Suppose now that choriambic syncopation could also be combined with ionic syncopation, once within each metron as before, resulting in the sequence – ◡ ◡ – ◡ ◡ – –, as seen in (34b).

(34)



	1	2	3	4		5	6	7	8	
Stage 1:	◡	–	◡	–	|	◡	–	◡	–	iambic dimeter
Stage 2:	–	◡	◡	–	|	◡	◡	–	–	syncopation

If the sequence – ◡ ◡ – ◡ ◡ – – becomes stabilized, its distance from the iambic prototype and superficially left-headed form could lead to reanalysis as a meter in its own right, as happened with other syncopated forms of iambs such as glyconics and ionics. In this case the result would be an actual left-headed ternary meter – ◡ ◡ , – ◡ ◡ , – –, yielding by catalexis a hemiepes.

If this pattern of syncopation is extended to both distichs, and the equivalence of ◡ ◡ and – is instituted in Weak positions, the result is a hexameter. This could hardly have happened in one fell swoop. Presumably it began in the favored Weak positions, and spread from there to Strong constituents, in a trajectory that passes through a spectrum of intermediate mixed dactylic-iambic meters. Such meters are found in early Ionic poetry, and their typology can be used to construct a reasonable picture of the historical development of the hexameter.

The simplest pattern arises by combining a syncopated dimeter like (34) with an unsyncopated one, either as lines of a distich or as hemistichs of a tetrameter. The result is half a hexameter followed by an iambic dimeter. Combinations of this type are attested in early Ionic verse, with the dactylic part reduced by catalexis to a hemiepes.

(35) ἀλλά μ᾽ ὁ λυσιμελής, ὦταῖρε, δάμναται πόθος — – ◡ ◡ , – ◡ ◡ , – , × – ◡ – , ◡ – ◡ –
but, my friend, limb-loosening desire overwhelms me (Archil. 196, Gerber 1999: 210-211)

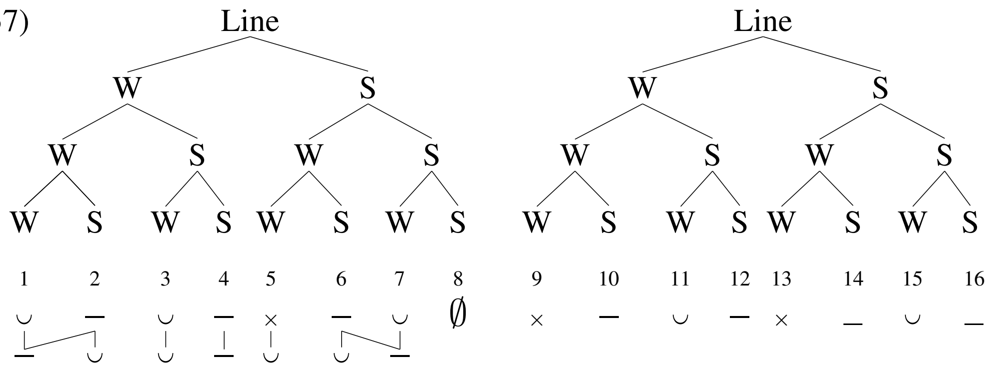
The dactylic and iambic parts are separated by a phrase boundary. In the stanzas of Archilochus' First Cologne Epode, the same combination seems to consist of two separate lines (Bremer & Slings 1987: 51 ff.). The poem is composed in three-line stanzas of the form iambic trimeter + hemiepes + iambic dimeter:

(36) καλὴ τέρεινα παρθένος· δοκέω δέ μι[ν — × – ◡ – , × – ◡ – , × – ◡ –
εἶδος ἄμωμον ἔχειν· — – ◡ ◡ , – ◡ ◡ , –
τὴν δὴ σὺ ποίη[σαι φίλην. — × – ◡ – , × – ◡ –

A beautiful, tender virgin; And I think
that she has a great body.
Make this girl your beloved." (ll. 6-8, tr. Eckerman 2011)

So, again visualizing syncopation as in (6), we have:

(37)



In Maas-style metrical notation, a line such as (35) can be represented as D | × E ‖, a simple dactylo-epitrite form. The relationship between the dactylo-epitrite metrical complex and Archilochean mixed meters was noted by Wilamowitz (1923: 420) and Korzeniewski (1968: 143). In the light of the present approach, both meters are derived from combinations of syncopated and unsyncopated iambic cola, with and without edge truncation. The dactylo-epitrite's "link-syllable" (as in the common colon "D –") may then be seen as an organic part of the original dactylic colon. The first part would have been – ◡ ◡ , – ◡ ◡ , – – (= "D –"), with the hemiepes D as its catalectic counterpart.

An even earlier stage in the evolution of the hexameter is preserved in the first line of the famous Nestor's Cup inscription (8th century), an iambic line with choriambic syncopation in the first foot – the very process which we claim was involved in spawning the hexameter measure. It is followed by two full hexameters.[26]

(38) – ◡ ◡ – , ◡ – ◡ – , ◡ – ◡ –
– – , – ◡ ◡ , – ◡ ◡ , – – , – ◡ ◡ , – ◡
– ◡ ◡ , – – , – – , – ◡ ◡ , – ◡ ◡ , – –

Νέστορόσ : ẹ̓[μ]ị : εὔποτ[ον] : ποτ⟦ο⟧ἕριον : ←
hὸσ δ᾽ ἂ(ν) τõδε πίε̄σι : ποτε̄ρί[ο̄] : αὐτίκα κε̃νον ←
hί̄μεροσ hαιρέ̄σει : καλλιστẹ[φά]ṿο̄ : Ἀφροδί̄τε̄σ ←

Nestor's cup I am, good to drink from.
Whoever drinks from this cup, him at once
desire will seize for beautiful-crowned Aphrodite.

So, starting with a distich, we can assume that syncopation begins with the first metron, as in (38). It may then be extended to the second metron of the first dimeter (whether line or already fused hemistich), as in (37), and/or to the first metron of the second dimeter. The second pattern can be illustrated by Anacreon's tetrameters, where choriambs – ◡ ◡ – can appear as regular Weak position variants of iambic metra (◡ – ◡ –), which can be catalectic (◡ – ×), or headless (– ◡ ×) in line-final position. (39) shows some of the variations that appear in his work.[27]

[26]This text follows Miller 2013: 145, except for ẹ̓[μ]ị instead of Miller's ẹ̓[στ]ị.

[27]Text and translations from Campbell 1988. West sees – ◡ ◡ – ◡ – ◡ – (¨*gl* in his notation) as a syncopated (anaclastic) variant of the glyconic ○○ – ◡ ◡ – ◡ –, along with – ◡ – ◡ – ◡ ◡ – (*gl*¨) and ◡ – ◡ – – ◡ ◡ – (West 1982: 31, 57, 96, 141). However, at least in early poetry their iambic affiliation is evident (see Korzeniewski 1968: 102, and Itsumi 1982, who both note examples of this combination from tragedy).

(39) a. ἐκ ποταμοῦ ᾽πανέρχομαι πάντα φέρουσα λαμπρά. – ∪ ∪ – , ∪ – ∪ – , – ∪ ∪ – , ∪ – ×
‘I come up from the river bringing (the washing) all bright.’ (Anacreon 385)

b. χαῖρε φίλον φῶς χαρίεντι μειδιῶν προσώπῳ· – ∪ ∪ – , – ∪ ∪ – , ∪ – ∪ – , ∪ – ×
‘Hail, dear light, with a smile on your lovely face’ (Anacreon 380)

c. ἀναπέτομαι δὴ πρὸς Ὄλυμπον πτερύγεσσι κούφης ∪ ∪ ∪ ∪ – , – ∪ ∪ – , – ∪ ∪ – , ∪ – ×
‘See, I fly up on light wings to Olympus in search of Love’ (Anacreon 378)

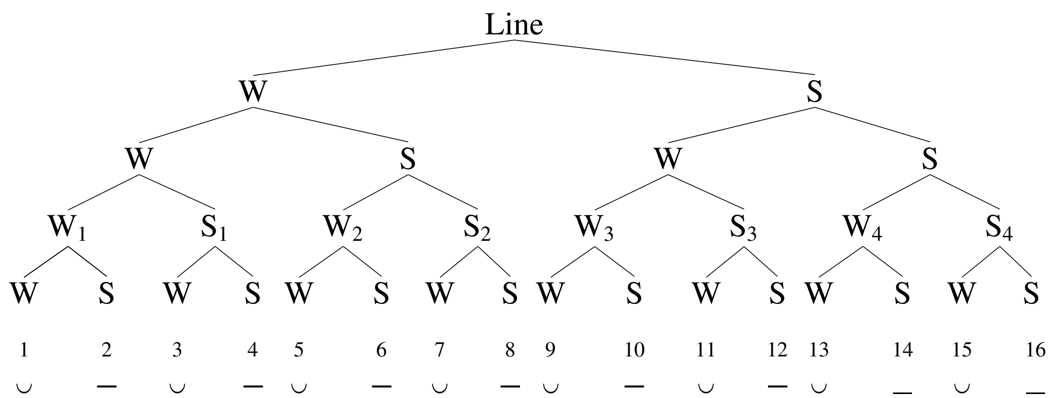
d. πρὶν μὲν ἔχων βερβέριον, καλύμματ᾽ ἐσφηκωμένα, – ∪ ∪ – , – ∪ ∪ – , ∪ – ∪ – , × – ∪ –
καὶ ξυλίνους ἀστραγάλους ἐν ὠσὶ καὶ ψιλὸν περὶ – ∪ ∪ – , – ∪ ∪ – , ∪ – ∪ – , × – ∪ –
πλευρῇσι ῾δέρμ᾽ ἦει᾽ βοός, × – ∪ – , × – ∪ –
νήπλυτον εἴλυμα κακῆς ἀσπίδος, ἀρτοπώλισιν – ∪ ∪ – , – ∪ ∪ – , – ∪ ∪ – , × – ∪ –
κἀθελοπόρνοισιν ὁμιλέων ὁ πονηρὸς Ἀρτέμων, – ∪ ∪ – , – ∪ ∪ – , – ∪ ∪ – , × – ∪ –
κίβδηλον εὑρίσκων βίον, × – ∪ – , × – ∪ –
‘He used to go about in an old cap, a wasped hood, with wooden dice in his ears and around his ribs a hairless oxhide, the unwashed wrapping of a wretched shield – that scoundrel Artemon, consorting with bread-women and ready whores, devising a fraudulent living;’ (Anacreon 388, ll. 1-6)

e. τὸν μυροποιὸν ἠρόμην Στράττιν εἰ κομήσει. – ∪ ∪ – , ∪ – ∪ – , – ∪ – , ∪ – –
‘I asked Strattis the perfumer whether he would let his hair grow long.’ (Anacreon 387)

In all these stanzas the tetrameter has already fused into a single line, but a medial caesura is still permitted, as in (39a,d,e), and even the metron boundaries for the most part align with word boundaries.

So, from fused tetrameters with the unmarked realization of the positions as shown in (40),

(40)



the variations in (39) are derivable by the following correspondence rules:

(41) a. The Weak position of each Weak foot (W_1, W_2, W_3, W_4) is anceps.

b. Choriambic syncopation in the Weak feet of Weak metra of both hemistichs (W_1, W_3), see (39a).

c. Choriambic syncopation in both Weak feet of the Weak hemistich (W_1, W_2), see (39b).

d. Resolution of a syncopated Heavy syllable in the maximally Weak position (W_1), as in (39c).

Example (39c) combines both syncopations, (41a) and (41b). In (39d), the first stanza follows the syncopation pattern of (39b), and subsequent stanzas (only the second reproduced here) follow the syncopation pattern of (39c); each stanza rearticulates the underlying iambic rhythm overtly with an iambic dimeter. Finally, (39e) continues an initial choriamb with an iambic trimeter, its second and third metron respectively acephalic and catalectic (forming an "ithyphallic").

Stesichorus concludes a run of hexameters with a mixed distich:

(42) παῖδας ἐνὶ μεγάροις — ◡ ◡ — ◡ ◡ —
θανόντας ἢ πόλιν ἁλοίσαν. ◡ — ◡ — ◡ — ◡ — —
'my sons dead in the palace or the city captured.' (Stesichorus 222A (Lille), Campbell 1991: 136)

Archilochus also pairs dactylic tetrameters and hexameters with iambic dimeters (examples in (59) and (60) below), and other combinations of have been inferred from the testimony of Greek metrists and imitations by Horace. On other early Ionic combinations of dactyls and iambs see Rotstein 2010 (*Margites*, Xenophanes). Dactyl+iamb combinations such as – ◡ ◡ , – ◡ ◡ , – , × – ◡ – are also found in the plays (Stinton 1965), whether modeled on Anacreon's verse or independently recreated. Hipponax 115 (Strasburg Papyrus, Gerber 1999: 436) alternates hemiepes and iambic trimeter:

(43) κύμ[ατι] πλα[ζόμ]ενος· — ◡ ◡ , — ◡ ◡ , —
κἀν Σαλμυδ[ησσ]ῷι γυμνὸν εὐφρονεσ[τατα × — ◡ — , × — ◡ — , × — ◡ ×
Θρήϊκες ἀκρό[κ]ομοι — ◡ ◡ , — ◡ ◡ , —
λάβοιεν – ἔνθα πόλλ᾿ ἀναπλήσει κακὰ × — ◡ — , × — ◡ — , × — ◡ ×
δούλιον ἄρτον ἔδων — ◡ ◡ , — ◡ ◡ , —
. . . drifting about on the surf.
And naked at Salmydessus, may he be met in their merriest manner
by the top-knotted Thracians –
there he will have his fill of pain,
gnawing on the breadcrust of slaves – (ll. 4-8)

Summing up: our analysis implies that syncopation of Weak constituents (the first halves of metra, hemistichs, lines, and distichs) in iambic meters produced combinations of dactyls and iambs. They were recruited as a new kind of autonomous mixed form consisting of a dactylic line or colon joined with an iambic one asynartetically within a line as in (39), or across lines as in (36) and (43). 7th-6th c. poets, particularly the meticulous craftsman Archilochus, would not have continued to compose such verse had they not felt a rhythmic compatibility between dactylic and iambic measures. The placement of the iambic colon in the closing position shows that it was still perceived as the basic form. In that sense the various attested mixed forms can be seen as a synchronic projection of the historical progression from iambs to hexameter that we have posited, and as witnesses to its plausibility.

What enhances the value of this evidence is the typological rarity of mixed forms of this type, in which distinct meters systematically alternate. As in the combinations of glyconic and ionic meters discussed above, iambs almost always part of the mix, and usually placed in closing positions where meter reverts to regularity. The prevalence of these synchronic affiliations in Greek calls for an explanation. The historical primacy of iambs in Greek versification and the derivation of ternary meters from them provides one.

The generalization that Weak constituents have priority for syncopation has one exception in Greek: the choliambic, an iambic meter with syncopation in the *final* foot. It is used by Hipponax as a vehicle for his abusive and raunchy verse, which is well served by its harsh anti-closure effect:

(44) × – ◡ – , × – ◡ – , × – – ×
τίς ὀμφαλητόμος σε τὸν διοπλῆγα
ἔψησε κἀπέλουσεν ἀσκαρίζοντα·
What navel-snipper wiped and washed you
as you squirmed about, you crack-brained creature?
(Hipponax 19, text and translation from Gerber 1999: 366-67)

Not surprisingly, dactylic+iambic sequences similar to the regular Greek ones appear also in Vedic as syncopated variants of the basic iambic trimeter. From the Greek perspective, Vedic iambic trimeters that have both choriambic syncopation (as in lines 4b and 8c of (10)) and H in position 7 (as in line 8c of (10), an uncommon realization) are describable as combinations of a dactylic trimeter (half a hexameter) – ◡ ◡ , – ◡ ◡ , – – plus an iambic metron ◡ – ◡ –, catalectic in 11-syllable lines like (45b):

(45) a. – ◡ ◡ – ◡ ◡ – – ◡ – ◡ –
ná pramíye savitúr dáiviyasya tád (jagatī, 12 syllables) *RV* 4.54.4
śagdhí yáthā rúšamaṃ śyā́vakaṃ kr̥̄́pam (anuṣṭubh, 12 syllables) *RV* 8.3.12

b. – ◡ ◡ – ◡ ◡ – – ◡ – –
tā́ni narā jujuṣā́ṇópa yātam (triṣṭubh, 11 syllables) *RV* 2.39.8

It should be clear from section 2.3 that such lines are still purely iambic in Vedic, *not* asynartetic combinations of dactyls and iambs. They represent just one of hundreds of types of instantiations of Vedic trimeter, and have no special status among them. However, they do show how mixed rhythms of the type encountered in early Greek emerge as surface realizations of iambs already in Vedic.

3.3 The correspondence constraints

We have supposed that the earliest reconstructible meter is an iambic octosyllable with optional syncopation and edge truncation, which could be paired into distichs (like (37), but with catalexis optional), and that such distichs fused in Greek into a single line with a medial caesura, with the structure (40). At this point the meters bifurcate. A further integration of the two hemistichs leads into the classical "trochaic" tetrameter, actually a catalectic iambic tetrameter as assumed here, with the structure in (27). Another development, the one of primary interest here, leads by syncopation to the proto-hexameter with two cola – ◡ ◡ , – ◡ ◡ , – – | – ◡ ◡ , – ◡ ◡ , – –. Both have 24 moras, divided differently: 2×2×2×3 in the dimeter distich (stage 1) and 2×3×2×2 in the reanalyzed new trimeter distich (stage 2). The third and sixth feet would have been conditioned by the medial caesura and the end of the line. The correspondence conditions at this point are:

(46) a. S is –

b. A final W is ⏑̱

c. (Otherwise) W is not –

d. (Otherwise) a position is ⏖ (bimoraic)

The metrical equivalence between – and ⏑ ⏑ does not come out of nowhere. It is rooted in the language's phonology and already implicit in the inherited iambic meter through the moraic equivalence between – ⏑ and ⏑ – that lies behind the process of syncopation. It just cannot be manifested in responsion as long as the restrictive correspondence constraints (3aii) and (3bi) enforce isosyllabicity. The latent equivalence between – and ⏑ ⏑ becomes manifest as overt internal responsion by way of a side effect of the shift from (3aii) and (3bi) to the less restrictive correspondence constraints (3ai) and (3bii), which require that W (like S) is bimoraic in the binary (iambic/trochaic) meters. To say that the rise of the equivalence between – and ⏑ ⏑ is a side effect is not to deny its importance: it just means putting it in the context of a larger innovation in the Greek metrical system. In the nascent hexameter, it resulted from loss of (46c).

As in the tetrameter, and in all symmetrical meters, the elimination of the medial caesura then resulted in the full-fledged hexameter pattern.

3.4 Breaks and bridges

It is immediately apparent that the penthemimeral and hepthemimeral caesuras and the bucolic dieresis, after positions 5, 7, and 8 respectively (numbering the positions as (47), following Porter 1951), correspond to sites where syntactic breaks are frequent in the original iambic tetrameter. Five of the six positions where syntactic breaks may occur in tetrameter correspond to positions where syntactic breaks occur in hexameter (with percentages from West 1982: 36, 41 indicating the frequency of "sense-pauses"):

(47)

3 17 9 5 23 2 49 % sense-pauses

tetrameter: (⏑) – ⏑ | – | × – | ⏑ | – × | – ⏑ | – × – ⏑ – |

.6 2 6 7 12 9 3 11 63 % sense-pauses

position number 1 | $1\frac{1}{2}$ | 2 | 3 | $3\frac{1}{2}$ 4 5 | $5\frac{1}{2}$ | 6 7 | $7\frac{1}{2}$ 8 | 9 $9\frac{1}{2}$ 10 11 12 |

hexameter: – | ⏑ | ⏑ | – | ⏑ ⏑ – | ⏑ | ⏑ – | ⏑ ⏑ | – ⏑ ⏑ – – |

In fact, we can derive the entire colometry of the hexameter from its iambic source. In addition to breaks after positions 5, 7 and 9, the hexameter has frequent syntactic breaks also after positions $2\frac{1}{2}$ and 3, whose counterparts in the tetrameter likewise allow syntactic breaks. Hermann's Bridge after position $7\frac{1}{2}$ of the hexameter – the avoidance of a word boundary after the "fourth trochee" – corresponds to the rarity of word endings in the corresponding position of iambic trimeter and tetrameter, viz. before position 6, counting from the end.

The common break in the middle of the second metron of the tetrameter (realized in 9% of lines) has no counterpart between positions 4 and 5 in the hexameter. But this is where our proposed derivation of the hexameter posits syncopation. Recall that syncopation does not occur across a colon boundary. Therefore the pool of syncopated tetrameters that provide the basis for reanalysis as hexameters will not contain any lines with a break at that point. Since there are no breaks at that point in the source, none will appear in the reanalyzed meter either.

A second discrepancy likewise finds an explanation. The trochaic caesura after position $5\frac{1}{2}$ in the hexameter doesn't correspond to a significant site of breaks in the tetrameter. A glance at (47) shows that it corresponds to the juncture between the two eight-syllable distichs that the tetrameter grew out of. These must have been at one point separable by phrase boundaries, just as the eight-syllable lines of Vedic triṣṭubh and gāyatrī strophes are. A caesura between the two hemistichs could have been inherited from this stage, surviving after position $5\frac{1}{2}$, but eliminated after position 6 in the hexameter (categorically in later hexameter, Bulloch 1970, Devine & Stephens 1994: 427) because of the general prohibition on *caesura media* in Greek meters, which also forbids a caesura at the corresponding position in the extant tetrameter.

There is a subtler discrepancy between tetrameter and hexameter break sites in (47) which can also be explained this way. The hepthemimeral caesura (position 7) aligns with the main caesura of the tetrameter, where there is a break in 23% of lines, yet syntactic breaks in that hexameter position occur only in 3% of hexameter lines. Still, the hepthemimeral does have its expected share of *word* boundaries — no less than 45% of all lines (Porter 1951: 60). The unexpected rarity of syntactic breaks at this spot (in comparison to the frequent word breaks) is explained by our theory. The position in question is again a syncopation site — the syncopation site of the third metron. Since there is no syncopation across syntactic breaks, only tetrameter lines which lacked a syntactic break at these locations could undergo syncopation, and therefore only such lines could undergo reanalysis as hexameters. Word boundaries, on the other hand, are no bar to syncopation, so they continue to be frequent at the hepthemimeral caesura, as they were in the corresponding position in the tetrameter.

Phrase breaks at position 7 might be even rarer were it not for the fact that those Homeric hexameters that lack the regular central caesura (ca. 1% of all lines) usually have breaks after positions 3 and 7, the second and fourth Strong positions. This creates a tripartite division which corresponds exactly to the two most important breaks of the tetrameter (see (47)).

(48) a. ἀλλήλων | ἰθυνομένων | χαλκήρεα δοῦρα (*Il.* 6.3)
b. ἀλλ᾽ ἤτοι | Τελαμωνιάδῃ | πολλοί τε καὶ ἐσθλοὶ *Il.* 13.709
c. παῖδα δ᾽ ἐμοὶ λύσαιτε φίλην, τὰ δ᾽ ἄποινα δέχεσθαι *Il.* 1.20

A similar compensatory placement of caesuras may occur in Vedic trimeters. If they lack the regular caesura after the fourth or fifth position, they almost always have breaks after the third position, and often also after the eighth (Arnold 1905: 189-192).

(49) a. agnínā | turváśaṃ yádum | parāváta (*RV.* 1.36.18)
b. yénāviharyatakrato | amítrān (1.63.2c)
c. tám índraṃ | sómasya bhr̥thé | hinota (*RV.* 2.14.4)
d. ástabhnān | māyáyā diyā́m | avasrásaḥ (*RV.* 2.17.5)
e. áchendrā|brahmaṇaspatī | havír naḥ (*RV.* 2.24.12)
f. namasyā́ | kalmalīkínaṃ | námobhiḥ (*RV.* 2.33.8)
g. áśvinā | vāyúnā yuvā́ṃ | sudakṣā (*RV.* 3.58.7)
h. ūrdhvā́ṃ no | adhvarā́ṃ kr̥taṃ | háveṣu (*RV.* 7.2.7)
i. áśvaṃ ná | vājínaṃ hiṣe |námobhiḥ (*RV.* 7.7.1)
j. svastáye | sarvátātaye | br̥haté (*RV.* 9.96.4)
k. suṣumnā́ | iṣitatvátā | yajāmasi (*RV.* 10.132.2)

3.5 Submetrical feet

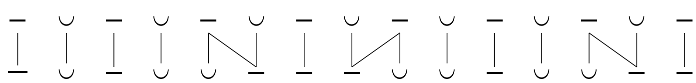
Another archaic feature of the hexameter are lines with trochaic first feet, which have been cited as evidence for Berg's theory (Berg & Lindeman 1992).

(50) a. ποῦ δὲ νηῦς ἕστηκε θοή, ἥ σ᾽ ἤγαγε δεῦρο *Od.* 26.299

b. εἴ κεν αὐσταλέος, κακὰ εἱμένος ἐν μεγάροισιν *Od.* 19.327

Our proposal explains them as direct reflexes of the acephalic (headless) variety of tetrameter. Acephaly was probably an inherited feature of Indo-European versification, since it generates headless seven-syllable cola both in Greek (see section 2 above) and in the Rigveda (Vine 1977). Although by historical times acephaly had became obligatory in the Greek tetrameter (hence the term "trochaic"), the evidence from other Greek meters and from Vedic makes it likely that it was optional at an earlier stage. Headless iambs obviously could not undergo choriambic syncope in the first foot, so they would retain initial – ⏑, continuing dactylically by ionic syncopation in the second metron:

(51) Acephalic iambic tetrameter → Initial trochaic foot in hexameter



Headless tetrameter

Syncopation

In the extant Iliad and Odyssey text, trochaic feet survive mostly where the missing mora can be seen as licensed by a following consonant-liquid sequence, an initial liquid or nasal historically derived from **sr-, *sn-* etc., or a vowel-initial word that once began with a digamma, or an occasional analogical extension of these *lautgesetzlich* cases. Such configurations normally license Light syllables in metrical Strong position, but, except for just these aberrant trochaic feet, they do not license Light syllables in metrical Weak positions of spondees (West 1982: 39). Therefore lines such as (52) need a special explanation, which our proposal provides.

(52) a. πολλὰ λισσόμενος ἔπεα πτερόεντα προσηύδα *Il.* 21.368

b. Ἕκτορ εἶδος ἄριστε μάχης ἄρα πολλὸν ἐδεύεο. *Il.* 17.142

Berg explains inital submetrical feet in the hexameter as residues of the line-initial × × he posits for stage 3 in (33). If that were their origin, we should expect as many instances of residual ⏑ ⏑ and ⏑ – in that position. Actually there are no pyrrhic initial feet in Homer; the few iambic initial feet that occur, such as (53a), are explainable by metrical lengthening of ⏑ – to – –, parallel to the metrical lengthening of trisyllabic ⏑ ⏑ ⏑ to – ⏑ ⏑ seen in (53b,c,d).

(53) a. ἐπεὶ δὴ τόνδ᾽ ἄνδρα θεοὶ δαμάσασθαι ἔδωκαν *Il.* 22.379

b. διὰ μὲν ἀσπίδος ἦλθε φαεινῆς ὄβριμον ἔγχος *Il.* 3.357

c. φίλε κασίγνητε θάνατόν νύ τοι ὅρκι᾽ ἔταμνον *Il.* 4.155

d. Ζεφυρίη πνείουσα τὰ μὲν φύει, ἄλλα δὲ πέσσει *Od.* 7.119

Since Berg's theory posits initial × × × × for the hypothetical stage 3 of (33), it predicts not only disyllabic submetrical feet as residues of the first two × × positions, but also submetrical *second* feet as residues of the third and fourth × × positions. But the second foot of the hexameter has few if any submetrical feet.

The one other place in the hexameter that *did* have significant numbers of submetrical feet in Homer's time, or not long before it, is the *fourth* foot. Berg's account does not explain that localization, for fourth feet have no special status in (33). They have the form × × only at stages 1 and 2, when most of the line has that form. Our assumption that the tetrameter began as a pair of iambic eight-syllable lines joined into a distich implies that the second hemistich originally had a headless form like the first, descended from a time when it was an independent line. The license of submetrical fourth feet could then have arisen like that of submetrical first feet: if the second line of a distich was headless, the fused hexameter would have had a trochaic fourth foot. After fusion the license could have spread as a conventional artifice, but because of its arbitrariness it was eventually eliminated.. The former existence of trochaic fourth feet, and their dactylization in the transmission of the text by adding a syllable to complete the required measure, can be detected by numerous artificially stretched words (*Streckformen*) with tell-tale morphological anomalies (Meister 1921: 10-27). To mention just a few of Meister's examples, the normal genitives γαστρός, μητρός and the 3.Sg.Aor. ὦρτο were replaced in several lines in the fourth foot by the unique and historically unwarranted trisyllabic forms γαστέρος, μητέρος, and ὤρετο:

(54) a. αὐτὰρ ἔμ᾽ Ἀντίνοος βάλε γαστέρος εἵνεκα λυγρῆς *Od.* 17.473
b. φασὶ μνηστῆρας σῆς μητέρος εἵνεκα πολλοὺς *Od.* 3.213
c. νύχθ᾽ ὕπο τήνδ᾽ ὀλοὴν ὅτε τ᾽ ὤρετο δῖος Ἀχιλλεύς *Il.* 22.102

The reason trochaic fourth feet were more thoroughly purged from the text than first feet is evidently that when the hemistichs were fused into a hexameter and the medial caesura between them was eliminated, they became synchronically unmotivated and could only be understood as an arbitrary metrical license. At first additional lines might have been built sporadically on the same pattern, but eventually nearly all instances of internal trochaic feet were edited away or regularized. In the first foot, the line break continued for a longer time to serve as a licenser that permitted some inherited trochaic feet to survive in the received text.

Not all submetrical feet originate this way. Some have arisen by regular linguistic change, and to the extent that these survive in the text they should be equally frequent throughout the line, rather than concentrated in the first and fourth foot. For example, the genitive ending -ου is from disyllabic **-osyo*, apparently via **-ohyo* > **-ōyo* > **-ōo* > **-oō* (Kiparsky 1967), and its contraction produces trochaic feet like (55):

(55) τῶν αὖθ᾽ ἡγείσθην Ἀσκληπιοῦ δύο παῖδε *Il.* 2.731
υἷες Ἰφίτου μεγαθύμου Ναυβολίδαο *Il.* 2.518
βῆν εἰς Αἰόλου κλυτὰ δώματα: τὸν δ᾽ ἐκίχανον *Il.* 10.60 Ἰλίου προπάροιθε πυλάων τε Σκαιάων. *Il.* 22.6

E.g. . . . Ἀσκληπιοῦ δύο. . . – – ◡ – ◡ ◡ is from metrically regular **Asklēpioō duo* – – ◡ ◡ – ◡ ◡.

Of course, the obligatory disyllabicity of the last foot can now be seen as a retention from the original hexameter, where the final – –, realized as – × , could simple by interpreted as a catalectic dactyl.

3.6 Formulas

The commonest Homeric fixed formulas, such πολύμητις Ὀδυσσεύς, κορυθαίολος Ἕκτωρ, ἦμος δ' ἠριγένεια φάνη ῥοδοδάκτυλος Ἠώς, as well as stock generic epithets like δουρικλυτός, κυδαλίμος, μεγαλήτωρ, are specially suited for hexameter. Their use in iambic verse would have required syncopation, so they could not become formulaic until the rise of suitable meters. And as far as I am aware, not a single fixed formula of poetic language has been reconstructed for Indo-European.

THEMES, as defined by Watkins (1995, Chs. 2, 3) are a different story. They include not only flexible formulas (Hainsworth 1968, Kiparsky 1976) but any bits of conventional poetic phraseology, even grammatical or semantic figures, or in the limiting case single words. They are not limited either grammatically to any specific inflectional category, word order, or syntactic construction, or metrically to any specific measure or position in the line. Such themes can easily be imported from iambic to dactylic meters and vice versa, and their flexibility makes them adaptible to language change. Lexically fixed instantiations of themes can of course jell as fixed formulas in particular meters and in different languages. It is in the domain of lexico-grammatical phraseology rather than in verbatim phrases that we can hope to recover Indo-European formulaic language (Watkins 1995, Chs. 12-16).

A case in point is the equation κλέος ἄφθιτον ∼ *śrávaḥ … ákṣitam* 'unquenchable fame', long assumed to be an IE poetic formula. Finkelberg 2007 claims that κλέος ἄφθιτον is not even a Homeric formula, let alone a formula with an Indo-European pedigree. Her weightiest argument is that κλέος ἄφθιτον in Homer is neither a meaningful syntactic constituent nor a metrical constituent (a hexameter colon), whereas a formula is normally both of these things. In κλέος ἄφθιτον ἔσται (*Il.* 9.413) "(his) fame will be imperishable", ἄφθιτον is the predicate of κλέος ἔσται rather than a modifier of ἄφθιτον,[28] and the phrase does not fill a colon. Still, the collocation of **k̂léu̯os* and *n̥-d*^{h}*g*^{wh}*itom* could have been an Indo-European *theme* (Watkins 1995, Ch. 15). Finkelberg draws attention to two κλέος formulas which do fulfill the criteria: κλέος οὔ ποτ' ὀλεῖται (*Il.* 2.325, *Il.* 7.91, *Od.* 24.196), and κλέος ἄφθιτον αἰϝεί, the latter in the 6th c. dedicatory inscription from Krisa (Delphi) quoted in (56), and probably in two other inscriptions:

(56) τάσδε γ' Ἀθαναίαι δραϝεός Φαϝ|εάριστος ἔθεκε — ⏑ ⏑ , — — , — ⏑ ⏑ , — ⏑ ⏑ , — ⏑ ⏑ , — —
hε͂ραι τε, hος καὶ κ|ε͂νος ἔχοι κλέϝος ἄπθιτον αἰϝεί. — — ⏑, — — , — ⏑ ⏑ , — ⏑ ⏑ , , — ⏑ ⏑, — —
Phaw(?e)aristos placed these vessels for Athena and Hera,
so that he too might have unquenchable *kleos* always.
(CEG 344, trans. Day, source: Lavigne 2011)

The combination of κλέος ἄφθιτον αἰϝεί with a verb of having or giving is a good candidate for a theme, since it is an entire meaningful syntactic constituent (a verb phrase). Moreover, the lexically fixed part in Greek even meets the more stringent criteria for a fixed formula, in that it runs from the hepthemimeral caesura to the end of the line.[29] The collocation is arguably a theme of Indo-European provenance because κλέος ἄφθιτον αἰϝεί matches Vedic *śrávaḥ … (viśv)ā̆yu … ákṣitam* in (57):

[28] Similarly in κλέος ἄφθιτον εἴη Hes. fr. 70.5, it seems.

[29] As Finkelberg notes, formulaic language is at least as likely to be found in inscriptions carved in stone as in oral poetry. Even so, she thinks that even this formula is not all that old, on the grounds that κλέος until the end of the 7th century meant only 'rumor', 'report', 'repute'. This is not convincing, for 'fame' is a hyponym of 'repute', and it is hard to establish on the basis of the available evidence that κλέος could not mean 'fame' in the earlies Greek, as it surely does in the cited Homeric passages.

(57) asmé pr̥thú śrávo br̥hát viśvā́yu[r] dhehi ákṣitam (*RV* 1.9.7) × – ∪ – ∪ – ∪ – × – ∪ – ∪ – ∪ –

Given that οὐ 'not' (< 'ever', related to English *aye* and *nay*) and *viśvā́yu* (restorable for the text's *viśvā́yuḥ*, Arnold 1905: 142, Wackernagel & Debrunner 1954: 478) point to an IE adverb h_2*ói̯-u* 'always' (accusative, or endingless locative?), we can infer an IE theme consisting of **k̂léu̯os n̥-dʰgʷʰitom* h_2*ói̯u*, complementing a verb of having or giving. Its is realized iambically in Vedic (57) and dactylically (with an *-i* locative) in Greek (56).

The association of the verb χευ- 'pour' with the thing-poured ἀχλύς 'darkness' and the directional locative κατ᾽ ὀφθαλμῶν 'down over the eyes' constitutes a flexible formula in Homer, where it appears with variable tense/aspect and diathesis of the verb, and variable case and grammatical function of the noun:

(58) a. . . . κατὰ δ᾽ ὀφθαλμῶν κέχυτ᾽ ἀχλύς [Perf.Middle]
'a mist poured down over his eyes' *Il.* 5.696

b. . . . κατ᾽ ὀφθαλμῶν χέεν ἀχλὺν [Aor.Act.]
Πηλεΐδη Ἀχιλῆϊ
'he poured down a mist over the eyes of Achilles, son of Peleus' *Il.* 20.321

c. . . . κατ᾽ ὀφθαλμῶν δ᾽ ἔχυτ᾽ ἀχλύς. [Aor.Middle]
'and a mist poured down over his eyes' *Od.* 22.88

Homer places it at the masculine or feminine caesura (positions $5\frac{1}{2}$ or 6). Archilochus gives the same formula an iambic twist, in a catalectic iambic dimeter that follows a mixed line consisting of a dactylic tetrameter plus an "ithyphallic" (a catalectic acephalic iambic dimeter).

(59) τοῖος γὰρ φιλότητος ἔρως ὑπὸ καρδίην ἐλυσθεὶς – – , – ∪ ∪ , – ∪ ∪ , – ∪ ∪ , – ∪ – , ∪ – –
πολλὴν κατ᾽ ἀχλὺν ὀμμάτων ἔχευεν × – ∪ – , ∪ – ∪ – , ∪ – –
'For such a desire for sex coiled itself up under my heart,
[and] poured a thick mist down over my eyes'
(Archilochus 191, Gerber 1999: 204-205)

In (60) Archilochus splits Homeric ὀδύνῃσι πεπαρμένος 'pierced through with pangs' (*Il.* 5.399) between a hexameter and an iambic dimeter in one of his characteristic composite .

(60) δύστηνος ἔγκειμαι πόθῳ,
ἄψυχος, χαλεπῇσι θεῶν ὀδύνῃσιν ἕκητι – – , – ∪ ∪ , – ∪ ∪ , – ∪ ∪ , – ∪ ∪ , – –
πεπαρμένος δι᾽ ὀστέων. ∪ – ∪ – , ∪ – ∪ –
'I am in the throes of desire, miserable and lifeless, pierced through my bones with grievous pangs thanks to the gods.' (Archilochus 193, Gerber 1999: 208-9)

Such examples show that formulas adapt to metrical and phonological change, and that new ones are created to fit new meters and new pronunciations. It seems unlikely that formulas could create meter in the way envisaged by Nagy 1974, for fixed formulas presuppose an already existing meter, and flexible formulas and themes are not metrically constrained.

I conclude that the Greek glyconic, ionic, and iambo-choriambic meters are historically derived from the Indo-European eight-syllable iambic dimeter line, and that hexameters, and probably also the dactylo-epitrite meters, are derived from distichs of such lines. The Greek meters developed from syncopated forms of the inherited iambic meter by stages that can be tracked through intermediate mixed meters attested in the historical record. This does not mean that *all* Greek meters are necessarily derived from the inherited iambic dimeter, but it warrants exploration of that more ambitious hypothesis. In as yet unpublished work I make a case for the dimeter origin of the dochmiac.

4 Summary

The basic Indo-European line was an octosyllable built from two metra, each consisting of two binary iambic feet, with variation due to acephaly, catalexis, and syncopation. Pairs of octosyllables could be combined into distichs. The correspondence of – ◡ and ◡ – due to syncopation is attested in all inherited quantitative meters of Indo-European, and only in them, it would seem. It is licensed preferentially within the first metron, and never crosses a caesura. Three types of syncopation are possible in a binary meter: choriambic, ionic, and glyconic. All three are instantiated in Vedic, where they generate choriambic, ionic, and glyconic variants of the first metron, as well as in Greek (where syncopation is traditionally called "anaclasis").

Syncopation generates a very restricted set of variant realizations: it cannot change the mora count, cross major prosodic boundaries, or affect non-adjacent metrical positions, and – apart from special effects like choliambics – it is restricted to the first (Weak) half of a line or colon.

The moraic equivalence of – ◡ and ◡ – that syncopation licenses implies the more basic moraic equivalence between – and ◡ ◡, which however remains virtual as long as the stricter correspondence constraints in (3aii) and (3bi) are in force, becoming manifest only when they are replaced by their looser counterparts.

In Greek, several types of syncopated variants were reanalyzed as independent meters in their own right. Of these new meters, the most transparently related to iambs are iambic-choriambic combinations, particularly Anacreon's iambic-choriambic stanzas. More removed from iambs is the glyconic family of meters, recognized since Meillet as a descendant of the Indo-European octosyllable. According to the present analysis it is derived from the iambic dimeter prototype by choriambic and glyconic syncopation. The iambic progeny also includes dochmiacs, and most surprisingly the hexameter. The heaxameter is derived by choriambic and ionic syncopation from tetrameters that were fused from dimeter distichs by a process whose beginnings are seen also in Vedic. The affinity between hexameters and iambic meters is seen in archaic Ionic verse on Nestor's cup (with choriambic variation) and persists in Archilochus' and Hipponax' work.

This origin of the hexameter explains its colometry and its exceptional trochaic first and fourth feet somewhat better than Nagy's, West's, and Berg's derivations from a wilamowitzianus or a putative undifferentiated "choriambic dimeter" × × × × – ◡ ◡ –. Deriving the Greek meters directly from the inherited iambic octosyllable as reflexes of different syncopation patterns has broader advantages as well. The scenario of a simple iambic stichic meter used for both narrative and lyric verse[30] developing specialized offshoots for these functions seems more plausible than the

[30] As the Slavic *deseterac* is to some extent (Jakobson 1966: 424). Presumably the Indo-European octosyllable was used for memorized texts in other genres too – ritual, legal, even medical (of the type seen in the Atharvaveda and the Merseburg charms). In another oral poetic tradition, the Balto-Finnic octosyllable of the *Kalevala* and the *Kanteletar*, with its Mordvin kin (Kiparsky, to appear) provides a clear example of a single meter with diverse poetic functions, including lyric, narrative, charms, and proverbs.

alternative that Greek first developed an intricate strophic meter adapted for lyric verse and then built the epic hexameter out of it, ousting whatever stichic meter was previously used for narrative. The formal derivation is a positive step in that it eliminates the insertions, transpositions, and replacements stipulated in previous derivations of the hexameter and appeals exclusively to metrical correspondence principles which are known to function productively in all surviving Indo-European quantitative meters, and which can be reconstructed already for the proto-language. It is a necessary step under the generative perspective outlined in section 1, which limits modifications of meters to their natural rhythmic constituents – much as syntax does not just any chunks of words to be permutated or interpolated in arbitrary places. Therefore my proposal, should it prove correct, will lend credence to a phonologically grounded metrical theory of the form (1), in which correspondence rules generate metrical variation from simple uniform rhythmic templates.

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